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United States
Department of
Agriculture

Forest
Service

Dixie
National
Forest

Environmental Impact Statement

FINAL

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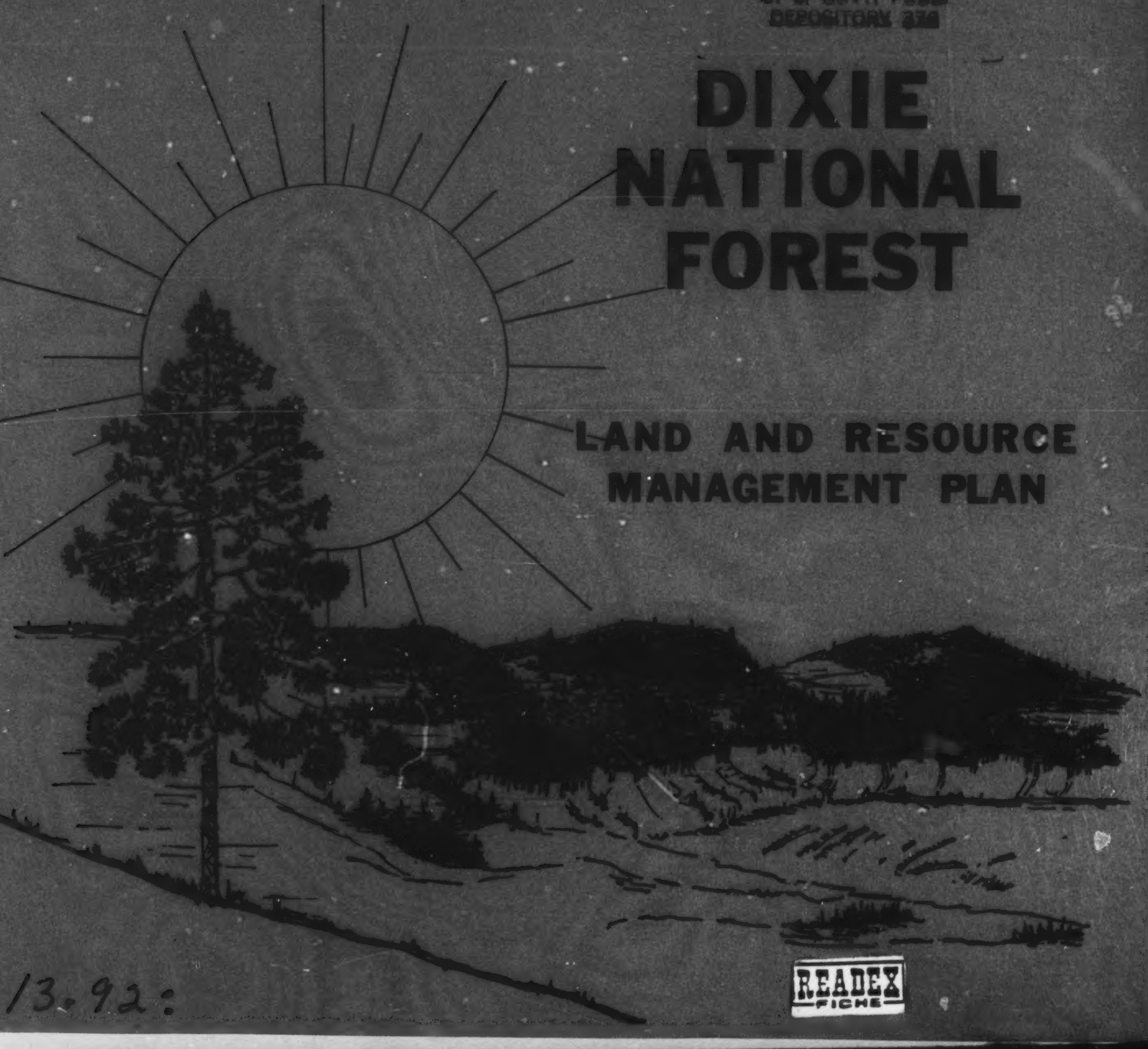
DIXIE NATIONAL FOREST

LAND AND RESOURCE MANAGEMENT PLAN



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KEY TO ABBREVIATIONS

Many of the terms used in Forest Planning are often abbreviated in tables and text to conserve space. Those abbreviations are listed below. Terms with an asterisk have a complete definition in the glossary.

AC	Acre(s)
AMS*	Analysis of the Mangement Situation
AUM*	Animal Unit Month
bd. ft.*	Board Foot
BTU	British Thermal Unit
CFR	Code of Federal Regulations
Cu. Ft.	Cubic Foot
DEIS	Draft Environmentat Impact Statement
DWR	Division of Wildlife Resources (Utah DWR)
EIS	Environmental Impact Statement
FEIS	Final Environmental Impact Statement
FIL*	Fire Intensity Level
FIS	Fiscal
G.A.	General Administration
IDT	Interdisciplinary Team
lb(s)	Pounds
LTSY*	Long Term Sustained Yield
M	Thousand
Max	Maximum
MCF	Thousand Cubic Feet
MIS*	Management Indicator Species
MKT	Market
MM	Million
MMBF	Million Board Feet
MMCF	Million Cubic Feet
MRVD	Thousand Recreation Visitor Days
MVP*	Minimum Viable Population
NEPA	National Environmental Policy Act
NFMA	National Forest Manage-Act
NPB*	Net Public Benefit
ORV's*	Off-Road Vehicles
Par. Ret.*	Partial Retention
PNV*	Present Net Value
PVB*	Present Value of Benefits
PVC*	Present Value of Costs
RARE II*	Roadless Area Review and Evaluation No. Two
RPA	Forest and Rangeland Renewable Resource Planning Act
Rec	Recreation
Retent*	Retention
RMOGA	The Rocky Mountain Oil and Gas Association
RNA*	Research Natural Areas
ROS*	Recreation Opportunity Spectrum
RVD's	Recreation Visitor Days
SAOT*	Skiiers at One Time
S & W	Soil and Water
SPM*	Semiprimitive Motorized
SPNM*	Semiprimitive Nonmotorized
(T)	Soil Loss Tolerance Value
VQ	Visual Quality
VQO*	Visual Quality Objective
WFUD's	Wildlife and Fish User Days
Wilder	Wilderness
Wldlf	Wildlife

FINAL ENVIRONMENTAL IMPACT STATEMENT
FOR THE
DIXIE NATIONAL FOREST
LAND AND RESOURCE MANAGEMENT PLAN

Washington, Iron, Garfield, Kane, Piute, and Wayne Counties in the State of Utah.

Type of Action:	Administrative
Lead Agency:	USDA Forest Service
Responsible Official	J.S. Tixier, Regional Forester Intermountain Region Federal Office Building 324 25th Street Ogden, UT 84401
For Further Information Contact:	Calvin Bird, Forest Planner Dixie National Forest 82 North 100 East P.O. Box 580 Cedar City, UT 84720 (801) 586-2421

Abstract: Eight alternatives were described and evaluated in the development of the Land and Resource Management Plan for the Dixie National Forest. The Forest contains 1,967,187 acres and is located in southwestern Utah. The alternatives considered in the Planning Process are: A. Current Program, B. Composite, C. Constrained Budget, D. Current Budget, E. Non-Market Emphasis, F. Market Emphasis, G. 1980 RPA, and H. High Productivity.

Alternative B - Composite is the proposed action and was used to develop the Forest Plan. The Forest Plan will be revised on a 10-year cycle or at least every 15 years. It may be revised whenever the Forest Supervisor determines that conditions or demands in the area covered have changed significantly.

INTRODUCTION

The Final Environmental Impact Statement (FEIS) discusses the eight alternatives developed in preparation of the proposed Land and Resource Management Plan (Forest Plan) for the Dixie National Forest. Alternative B-Composite is the proposed action and the discussion provides a brief description of the Forest Plan. The environment to be affected and the environmental consequences of implementing each alternative are also discussed.

CHAPTER 1 - PURPOSE AND NEED

The Dixie National Forest manages lands located in Southwestern Utah. The planning area covers 1,967,129 acres. National Forest lands are located in four separate areas:

-The Pine Valley Mountains
-The Markagunt Plateau
-The Paunsaugunt Plateau
-The Aquarius plateau and Boulder Mountains

Planning is conducted under the authority of the Multiple Use-Sustained Yield Act of 1960, and the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended by the National Forest Management Act of 1976. Assessment of the environmental consequences of the alternatives considered in the development of the Forest Plan is done in conformance with the National Environmental Policy Act of 1969 and implementing regulations (40 CFR 1500 - 1508).

The scope of the issues and concerns to be addressed in the Forest Plan and Final EIS were identified from comments solicited through individual and group contacts, written responses, and from National Forest personnel. The comments were analyzed and condensed into 14 planning issues as summarized below:

1. To what degree should the Dixie NF place a greater emphasis on fire management?

2. How much of an increased demand on Forest Resources should be anticipated?

3. To what degree should the Dixie NF consider economic and social stability of communities dependent on Dixie NF resources?

4. To what extent should the Dixie NF accelerate the harvest of overmature timber to reduce mortality losses?

5. To what extent should the Dixie NF emphasize wildlife management?

6. How should the Dixie NF manage its firewood resources?

7. What level of livestock use should be planned for?

8. How should the Dixie NF protect the on-site values of streams, lakes, springs, riparian areas, and their associated fishery values?

9. How should the Dixie NF coordinate the exploration, leasing, and development of energy and mineral resources, including location of energy transmission corridors, with other resource values?

10. How much emphasis should the Dixie NF place on coordinating or restricting Forest activities in order to maintain or enhance scenic values along major roads, other travel corridors, and areas of outstanding scenic quality?

11. What should the balance be between accommodating increased recreation use and other resource uses?

12. Should the Dixie NF emphasize developed group sites over single family units when considering new recreation site construction?

13. What should be done to separate the recreational activities of conflicting user groups such as cross-country skiers and snowmobilers?

14. How much emphasis should we put on a transportation system that is safe and convenient for public use?

CHAPTER II - ALTERNATIVES CONSIDERED

Eight alternatives for managing the lands and resources of the Forest were evaluated in detail. A brief description of the alternatives follows:

Alternative A Current Program (No Action). This is the alternative that describes the current management direction and budget of the Forest and describes the expected trends of the Forest for the next 50 years.

Alternative B Composite (Proposed Plan). This alternative is a combination of portions of some of the other seven alternatives joined to form a viable alternative. The budget provides for quality work and for facilities adequate for the expected use.

Alternative C Constrained Budget. This alternative describes the activities and outputs of goods and services that could be provided with a budget that is 25 percent less than the Forest's 1982 budget with emphasis basically the same as those in the Current Program Alternative.

Alternative D Current Budget. This alternative is similar to Alternative A except that the budget is slightly lower and is constrained from increasing.

Alternative E Non-Market Emphasis. This alternative emphasizes the amenity values of the Forest, such as: hiking, hunting, scenery, etc., and deemphasize's market values such as wood, grazing, etc. The budget is not limited.

Alternative F Market Emphasis. This alternative emphasizes the market values of the Forest, such as: timber harvesting, livestock grazing, developed recreation, etc. The budget is not limited.

Alternative G 1980 RPA Program. This alternative is responsive to the Dixie's share of the 1980 RPA Program as identified in the Intermountain Regional Guide.

Alternative H High Productivity. The purpose of this alternative is to display the effects of emphasizing high outputs of livestock grazing and timber. Only the minimum environmental values would be protected. The budget is not limited

CHAPTER III - AFFECTED ENVIRONMENT

This chapter describes the current situation of the Forest and its resources

1. Recreation

The Dixie National Forest has unique recreation opportunities. The Forest is adjacent to or surrounds three National Parks and one National Monument. The parks and monument draw people into the area from throughout the United States and from other countries. Once in the area, visitors and local people visit the Forest and use the campground facilities. The recreational opportunities are highly diversified and include camping, picnicking, driving for pleasure, downhill skiing, cross-country skiing, snowmobiling, hiking, hunting, and fishing.

Most of the use of campgrounds and picnic areas is during the summer months and the fall hunting seasons. The current capacity measured in people at one time for camping and picnic areas on the Forest is about 6,000. Demands for these sites is expected to exceed the capacity by about the year 2010.

Brian Head ski area is presently one of the fastest growing ski areas in Utah. It has grown from 33,400 skier visitor days in 1973 to 70,600 in 1983. The area is anticipating growth from nine to eleven lifts during the next few years. The proposed Crystal Mountain development would connect their lifts with Brian Head and increase the Total to 14 lifts.

Dispersed recreation is recreation use away from developed sites. Driving for pleasure is the most popular dispersed activity, followed by camping, fishing, gathering forest products, viewing outstanding scenery, hunting, and hiking. With the increase in fuel and heating costs, gathering fuelwood has increased 115% a year over the last three years. Driving for pleasure is expected to become more popular over the entire Forest. In addition, State Highway 14, and the Boulder-Grover Road are being considered scenic highways by the State. The added publicity will increase their use. Dispersed recreation areas receive intensive use on weekends and holidays, with areas near water being the most popular. Different types of users, such as snowmobilers and cross-country skiers, compete for use of a given recreation area. The most heavily used areas, especially for fuelwood and snow play, are near Cedar City.

The demand for dispersed recreation will not be exceeded across the forest; however, there will be some popular areas that may be revised. Those areas will be monitored and the necessary steps taken to mitigate the conflicts.

The Forest has approximately 637 miles of trails. The trail inventory lists 175 miles as adequate, 462 miles as inadequate, and 40 miles as planned but not constructed. The majority of the trails were originally constructed for fire access or livestock distribution. Two trails on the Forest have received National recognition and status. Whipple Trail and Cascade Falls trails have both been designated as National Recreation Trails.

Of the 1,363 archeological sites on the forest three sites have been nominated to the National Register of Historic Places. They are the Mountain Meadows Massacre Site and Pine Valley Chapel and Tithing Office on the Pine Valley Ranger District and the Long Flat Prehistoric Quarry Site on the Cedar City Ranger District.

No research natural areas have been designated at present. However, three potential areas have been identified. These areas are: The timbered Cinder Cone (640 acres), Table Cliff (1,235 acres) and Red Canyon (460 acres). All streams and rivers that meet the criteria for wild and scenic rivers as discussed in (PL 90-542) are located off the Forest. They will not be evaluated in the Forest Plan.

2. Wilderness

There are three designated wilderness areas on the Forest. These are Pine Valley Mountain (50,000 acres), Ashdown George (7,000 acres), and Box-Death Hollow (26,000 acres).

3. Fish and Wildlife

More than 350 species of wildlife and fish inhabit the Dixie National Forest for all or a portion of their life cycle. Consumptive and non consumptive uses of many of these species are an important part of recreation on the Dixie National Forest. There are major deer and Elk herds residing on the Forest. One endangered species resides on the forest year long: the Utah Prairie Dog. The Bald Eagle, another endangered species, is here, but only as a winter migrant.

Demand for fish and wildlife should continue to exceed the supply in the future. The current habitat improvement program includes, among others: willow planting, juniper thinning, aspen treatment, prescribed burning, road closures, stream structures, and lake circulators.

4. Range

The Forest's 104 grazing allotments encompass 685,793 suitable acres. A small band of wild horses also graze on the forest.

Grazing management is shared between the Forest Service and the grazing permittees. The Forest issues grazing permits that specify the type and number of livestock and the season of use.

The Forest produces an estimated 115,000 animal unit months (AUMS) of forage for livestock. Twenty thousand head of cattle and 25,000 head of sheep are permitted on the forest. There is a demand for all the grazing the Forest can provide.

Sixteen percent of the range is in poor condition leaving 84 percent in fair to good condition. Overall range condition is stable or improving in most areas.

Approximately 142,000 acres of depleted rangeland have been reseeded. The seedings provide a large portion of the forage consumed by livestock and big game on the forest.

5. Timber

The net acreage of the Forest is 1,883,676 of which 335,800 acres are classified as available and tentatively suitable for timber production. Commercial timber trees on the Forest include ponderosa pine, Engelmann spruce, Douglas fir, white fir, alpine fir and aspen. Juniper trees have some commercial value as fence posts. Average production for the past nine years has been about 20 million board feet. This figure includes sawtimber, roundwood, and commercial fuelwood.

A charge system for fuelwood for personal use was implemented in1982. In that year about 30,000 cords of fuelwood were harvested. All of the sawtimber from the Forest is purchased and manufactured locally. Several local communities depend largely on forest products for their economic base. Market areas served by local manufacturers include southwest markets and areas as far east as Pennsylvania.

A mountain pine beetle epidemic currently affects about 30,000 acres on the Forest. A harvest program is underway on the Escalante District to reduce the effects of this epidemic. A western spruce budworm outbreak affects another 45,000 acres. Other insect populations apparently remain at endemic levels.

6. Water

The Dixie National Forest manages mountain watersheds to produce clean water and prevent destructive floods while providing for timber production, recreation, grazing, and wildlife. The Forest yields approximately 481 thousand acre-feet of water each year. However, the total water yield is low compared to other Forests in the region, amounting to only about 0.25 inch per acre. Average water yields over 12 area inches occur on only four percent of the Forest. The Dixie National Forest is near equally divided between the Colorado River Basin and the Great Basin in both area and water production.

Intense thunderstorms occurring from July through September account for most of the summer precipitation in southern Utah. These summer storms can produce severe flash flooding in numerous dry washes, alluvial fans, and many perennial streams across the Forest. Few drainage bottoms on the Forest are immune to this type of flooding. Some of the larger streams which originate in the higher elevations of the Forest (e.g., Santa Clara River, Panguitch Creek, Mammoth Creek, and the East Fork of the Sevier River) are subject to more extensive and prolonged flooding during the spring snow melt period. The primary flood hazard areas for this type of flooding are off-Forest in the communities and agricultural lands along the streams.

In southern Utah, the demand for water currently exceeds the existing supply. No slackening in future demand is foreseen. However, the mix of water uses will probably change with agriculture use becoming less important relative to municipal, industrial, and minerals development uses. Any increase in water yield from the Forest, now or in the future, would undoubtedly be utilized by the surrounding or downstream water ues. However, the opportunities to increase water yield are limited.

7. Minerals

National Forest land is available for mineral exploration and development under applicable laws and regulations. For leasable minerals the Department of Interior leases tracts for development by the mining and oil and gas industries. Saleable minerals are the only type of mineral commodity for which the Forest Service can directly affect the supply by selling common variety mineral materials to individuals and private industry. The Forest has 1,781,779 acres presently available for mineral leasing and 1,773,319 acres available for mining entry. This is 95 percent and 94 percent of the Forest, respectively.

All of the legally available land on the Forest is suitable for exploration and development of minerals provided that those activities can be limited by protective lease and permit clauses and requirements to protect other resources. Development of oil and gas and other minerals, may be further restricted by limitations in permits to drill and approved operating plans. Such restrictions can be imposed to protect wildlife, soil, steep slopes, water quality, cultural resources, visual resources and other environmental factors.

Approximately 5000 locatable mining claims exist on the Forest. Assessment work is kept up on many of these, but, there is only minor exploration and development of locatable mineral resources at this time. Because of a depressed market there is little production. About 800 oil and gas leases exist on 75 percent of the Forest. Annually, 100 to 200 new application for oil and gas leases are processed, between 10 to 30 geophysical prospecting permits are issued, and one or two wildcat exploration wells are drilled. Currently, the rate of geophysical prospecting is low, but drilling wildcat wells and leasing is increasing. The Forest has a producing oil field at Upper Valley. This field, developed in 1964, currently has 23 oil wells which produce in excess of 1300 barrels of oil per day.

Carbon dioxide (CO_2) has been discovered on National Forest land in several locations. A well drilled in the Sand Creek drainage, on the Escalante Anticline, in 1983, yielded 124 million cubic feet of CO_2 gas per day at 100 lbs. per square inch. To date, five wells have yielded CO_2 in the same area.

Coal resources extend onto the Forest in four fields. Much of the coal is covered by more than 3000 feet of overburden, making it unavailable. In addition, much of it is of a quantity or quality that makes it uneconomical for industrial development. Commercial opportunities on the Forest exist in the Alton and Kaiparowits fields, where the quality of the coal is generally very good. Interest in coal development has been restricted by lack of market and isolation of the resource.

CHAPTER IV - ENVIRONMENTAL CONSEQUENCES

This chapter describes the effects of implementing the eight Alternatives described in Chapter II.

Direct and Indirect Environmental Effects

Environmental consequences are the anticipated effects of applying management practices to land areas. Consequences vary for each alternative because different mixes of practices produce different levels of resource outputs.

Environmental consequences of implementing the alternatives are described in physical, biological, social, and economic terms. These consequences are both direct and indirect. Direct effects occur at the same time and place as the initial management activity. They may be measured in how they change the predicted activity or output from the present level of activity as measured by the Current Program (No Action) Alternative. Indirect effects often result from the interaction between Forest resources and management activities. They occur either later in time or at a different location, but are nevertheless forseeable.

The following is a comparison of effects on each resource by alternative.

1. Recreation

The Current Program Alternative would maintain the existing site capacity at the current level; however, there is not sufficient funding to keep recreation facilities in satisfactory condition. The projected use will exceed the facilities available around 2002 and then as the site becomes more deteriorated vandalism will also likely increase. The Forest will not be able to maintain the existing facilities with the available full-time employees and other labor programs will be used. Human Resource Programs and volunteers will do sixty to seventy percent of the maintenance. If these programs are not available, use in the developed site will destroy a majority of the facilities by the end of the planning period. As the use increases and developed sites become overcrowded and run down, the recreationists will move out into the popular dispersed areas and many will be over-used.

Cultural resource surveys would be conducted on all management activities that will create ground disturbance.

The Composite Alternative increases the developed sites by 550 individual family units and two large group areas of 500 people each. This will provide sufficient capacity to accommodate the projected use to approximately 2021. Heavy maintenance will be needed to prolong the life of the facilities and preserve the natural resource. Human Resource Programs will complete 20 to 30 percent of the maintenance needs and the remainder will be done by Forest Service personnel. Funds will be allocated for site hardening and reconstruction of 50 sites each decade. The new construction will effect the natural environment but will help concentrate the use in areas that has been designed to handle it and thus save many dispersed areas from over use. Dispersed recreation would continue to increase at 3 to 5 percent annually; however, the capacity for the Forest would not be exceeded by the end of the planning period. Trails and trail heads would be constructed and maintained to control and disperse the use, these would create some disturbances during the construction phase. However, the overall effect of the development would be to protect the environment from the user.

Cultural Resources will be protected and significant properties will be nominated to National Register of Historic Places. A cultural Resources overview will be developed for the Forest.

The Constrained Budget Alternative maintains the site capacity at the current level; however, there is not sufficient funding to keep the facilities in satisfactory condition. The projected use will exceed the capacity by 2003 and then as people become more dissatisfied with the over-crowded and un-kept condition more vandalism would occur. The vandalism and general wear on the existing sites would result in the destruction of the natural resource and the loss of the capital investment. A majority of the maintenance (80-90%) would be done by volunteers or members of Human Resource Programs. If these programs are not available the maintenance would have to rely wholly on Pack it in - Pack it out Programs. There would be no re-construction of the existing facilities or construction of new. Dispersed recreation would occur over the Forest without control. Unplanned roads and trails would likely increase on the Forest creating conflicts with other resources. Popular dispersed sites would be worn out and the number of them would increase.

The cultural resource program will continue to survey projects as they arise. The majority of the money for the surveys will be provided by the initiation of the project either public or private.

The Current Budget Alternative also maintains the existing site capacity. Projected use will exceed the capacity of the facilities by 2005 and over-crowding will occur after that time. The over-crowding will shorten the life of the facilities, and decrease the satisfaction of the campers and create resource damage and law-enforcement problems. Human Resource Programs and volunteers would be relied on to do 70 to 80 percent of the necessary maintenance. Ten percent of the sites would be closed each year of some of the natural vegetation to become re-established; however closing of these sites would put more pressure on the sites remaining open. There would be three units re-constructed each year; however, this is only two percent of the total needed. As the sites become deteriorated so would the vegetation around the sites and the users would move into the dispersed areas.

Cultural resource efforts would be to continue at or below the present level.

The Non-Market Alternative would construct one hundred and fifty new units, and re-construct 377 existing units. This would provide the necessary facilities to meet the projected need until 2020. Recreation funding would be available to do 60 to 70 percent of the needed maintenance, the remaining 30 to 40 percent would be done by Human Resource Programs. The re-habilitation and hardening of existing units and the construction of 150 new units would have an immediate effect on the physical environment; however, the overall result would be the protection of the Forest wide environment from over use. This alternative would also construct 17 new trail heads to accommodate dispersed recreation. The new construction would disrupt the physical environment, but would help to disperse the use. The over-all effect of the trail heads and trail re-construction would be to disperse the use over a larger area thus preventing over-use in the more popular areas.

Cultural resources activities would increase over present levels.

The Market Alternative would construct 560 new units, two large group areas and re-construct 720 units. This would provide the necessary facilities to meet the projected needs until 2023. Recreation funding will be available to do 80 to 90 percent of the maintenance, the remaining 10 to 20 percent would be done with Human Resource Programs or volunteers. This Alternative will have the greatest immediate effect on the Forest because of the construction; however, the availability of the recreation facilities would help mitigate the wear on over-used facilities and the mis-use of dispersed areas. Dispersed recreation would be allowed to occur in a sporadic pattern across the Forest. Trails will not be maintained or re-constructed and will eventually disappear. Some of the more popular areas would become worn out and the natural resource would be lost. The number of people driving for pleasure would decrease as the Forest environment became less desirable. The Cultural Resource Program will expand to facilitate the increased work load. Seasonal employees would be hired to complete work load created by expansion in the Timber, Range and Recreation programs.

The RPA 1980 Alternative proposes to re-construct and harden 344 units and construct 27 new units by the year 2000. The site hardening is approximately 15 percent of the total needed to keep up with depreciation. The hardening would help to keep people in designated area, thus, preserving the vegetation around the existing sites. The projected use for developed sites would be accommodated until the year 2005, after this time much of the over-use would likely occur off the Forest or in dispersed areas on the Forest. The quality of the recreation experience in the developed sites would be diminished and law enforcement problems would develop. Ten percent of the existing trails on the Forest would be maintained to help accommodate the dispersed recreation. No new trails would be constructed. Human Resource Programs will be necessary to do 40 to 50 percent of the maintenance. Cultural resource activities would increase over present levels.

The High Productivity Alternative proposes to harden 3 sites per year. This is approximately 2 percent of the facilities that would be depreciated each year due to use. The continued use of the facilities after they have been used to their fullest would result in the loss of the original capital investment. The existing trail system would not be maintained and new road construction would replace some of the trails with roads. This would change the recreation use pattern on the Forest. Recreation use will be accommodated until 2005, however, site deterioration due to low maintenance will greatly decrease the aesthetic quality of the site. Human Resource Programs will be necessary to do 50 to 60 percent of the maintenance.

A comparison of alternatives indicates that the Market Emphasis (F) is the only alternative that would meet a portion of the projected demand in the fifth decade. Constrained budget and high productivity maintain the existing capacity. Current program and current budget lose a portion of the capacity over the present due to loss of facilities. The Composite, Non-Market and RPA Alternatives all expand existing facilities, but would not meet the projected demand during the last decade of the planning period.

The Current Program, Constrained Budget, Current Budget, and High Productivity Alternatives, which do not provide the needed facilities in the public sector, would increase the demand on the private sector. The Composite Action Alternative would maintain existing recreational special uses except for the

Brian Head and Crystal Mountain ski areas. Crystal Mountain would be permitted to develop and Brian Head would expand to join with it. The Composite Alternative would provide for expansion of the existing ski area to its potential capacity. Crystal Mountain would be allowed to develop and expand after master plan approval. Visual quality on the Forest in some areas would receive high priority. These areas are along major travel corridors between National Parks and Monuments and travel corridors leading to high use recreation areas and private property within the Forest developed into cabin sites. The Current Program, Composite, Non-Market and Market Alternatives place the most emphasis on maintenance of the visual resources. The Constrained Budget and Current Budget Alternatives have funding constraints which limit the rehabilitation of the visual resource. The RPA 1980 and High Productivity Alternatives emphasize market items and the amenities such as visual resources are not emphasized.

2. Wilderness

Under all alternatives, the Pine Valley Mountains, Ashdown Gorge, and Box-Death Hollow Wildernesses would be managed to protect the wilderness values. In addition the Forest has a total of 555,390 acres of land that met the minimum requirements for wilderness. At least 90 percent of these acres would maintain their present qualities through the first planning decade.

3. Wildlife and Fish

Under all alternatives the habitat of threatened or endangered species will be managed so that present population levels will be maintained or increased. The 1980 RPA, Non-Market, and Composite Alternatives provide for the greatest increases in big-game populations and fish production. This is directly related to their high levels of habitat improvement. The least increase in big game numbers occurs in the High Productivity and Market Emphasis Alternatives because it permits only modest habitat improvement and there would be considerable habitat disturbance from timber harvest and road construction and use. Under all alternatives, aquatic habitat capability is expected to gradually decline due to eutrophication of Panguitch Lake. There would be a slight decrease in big-game and fish production under the Constrained Budget Alternative while the Current Budget Alternative will lead to a slight decrease in big-game while maintaining fish production.

Minimum viable populations (MVP) of all Management Indicator Species (MIS) would be exceeded through the planning period under all alternatives.

The only alternative that closely approaches maximum potential populations is the Non-Market Alternative. With the exception of pounds of fish and elk numbers, estimated maximum potential populations (assuming proper distribution) of all MIS would be reached by 2030. Maximum potential populations of resident trout, Bonneville cutthroat trout and macroinvertebrates would not be reached under any alternative. The Non-Market Alternative, which has the highest outputs of wildlife and fish user days, is a reflection of near maximum wildlife populations resulting from an intensive habitat improvement program and deemphasis of market outputs which have the potential of adversely affecting wildlife habitats. Numbers of wildlife and fish user days (WFUDS) are considerably lower under all other alternatives.

Fisheries outputs do not follow the same trend as wildlife outputs under all alternatives. The highest fisheries outputs would still be produced by the Non-Market Alternative followed by the Composite Alternative with the second highest level of outputs. Outputs from the RPA 1980 Alternative would be slightly higher than present outputs. The High Productivity Alternative would have the lowest fisheries outputs with Current Program, Constrained Budget, Current Budget, and Market Alternatives also producing decreased fisheries outputs.

The difference between fisheries and wildlife outputs of the various alternatives is based on the fact that aquatic habitat is more sensitive to impacts from increased resource activity than is terrestrial habitat. Both aquatic and terrestrial habitat can be improved through improvement projects, but aquatic habitat can be degraded more rapidly by other resource activities under high commodity output alternatives.

4. Range

Under the Current Program, the Composite, and the Current Budget, animal unit month (AUM) outputs would remain constant at 115,000 AUMS annually. Under the Constrained Budget, AUM outputs would start at 110,000 in 1990 and gradually drop to 100,000 by 2030.

The Non-Market would have constant outputs of 90,000 AUMS annually throughout the planning period. Outputs under the RPA 1980, Market and High Productivity would gradually increase throughout the planning period. Under the Market Alternative, we would be producing about 119,000 AUMS annually by 1990 and 123,000 by 2030. Under RPA 1980 Alternative, we would produce 117,000 in 1990 increasing to 119,000 in 2030. Under the High Productivity Alternative, we would be producing 122,000 AUMS by 1990, increasing to 139,000 AUMS by 2030.

With the exception of High Productivity, all alternatives provide for current use by wild horses (350 AUMS) annually. Under High Productivity, these 350/AUMS would be committed to livestock and no provision would be made for wild horse use.

Riparian areas would be adversely impacted by the high output alternatives (RPA 1980, High Productivity, and Market) because of increase grazing in these areas. Riparian area practices and grazing pressure would continue at current levels under Current Program and Composite Alternatives. Under these alternative, funds would be available on at least an occasional basis for rehabilitation of selected riparian areas. It is not likely that the Constrained Budget or the Current Budget Alternatives would contain any funding for riparian area rehabilitation.

Decreased AUM outputs as prescribed in the Constrained Budget and Non-Market Alternatives would reduce grazing pressure on riparian areas somewhat. Cattle prefer riparian areas, however, and under the Constrained Budget Alternative, where funding for grazing administration would be limited, riparian areas might receive heavier use than under the high output alternatives. Under the Non-Market Alternative, deteriorated riparian areas would be protected from overgrazing by exclusion from the areas, by herding, by changing the class of livestock, or by a combination of these methods.

5. Timber

The High Productivity Alternative provides for harvesting an average of 31.5 MMBF per year during the 50-year planning period. This is the largest harvest provided by any alternative. All other alternatives reduce annual harvest below the High Productivity Alternative harvest level. The lowest annual average harvest of sawtimer would be the Constrained Budget (23.5 MMBF) and Non-Market Alternatives (19.9 MMBF). The Composite and Current Program Alternatives would maintain a harvest level similar to historical levels for the first decade before dropping in the latter 4 decades of the planning period.

Alternatives harvesting greater amounts of timber in the early decades will be consistent with industry needs and will meet objectives associated with desired future conditions of the Forest from a timber management perspective sooner than alternatives harvesting lesser amounts, but will not be without some impacts on other resources.

All alternatives considered in detail depend on an increased harvest of hardwoods (aspen) volume to maintain timber output levels and maintain a healthy aspen component on the Forest, as well as, economic stability in areas heavily dependent upon Dixie National Forest timber. For each alternative an increase in aspen volume offered for sale occurs after the first decade and continues through the fourth decade. This is also an increase over present aspen harvest. Costs of aspen management are low but so are product values assuming present market conditions. Additionally, no substantial market presently exists near the Forest to utilize the aspen resource. The reliability of harvest projections beyond the first decade hinge on the development of a market for aspen. Some industry interest has been expressed in the Dixie aspen resource and aspen products have been successfully marketed in other areas.

The economic implications of timber sale receipts which do not recover timber-related costs (below cost sales) are of National concern. To address this concern the following table (Table S-1) displays for each alternative that portion of the first decade allowable sale quantities (ASQ) that exceeds the first decade quantity defined in the Max Present Net Value (PNV) Benchmark. This identification does not mean there will be below cost sales within the plan period, but as harvest levels exceed the economically optimum level of 5.0 MMBF (Max PNV Benchmark) the probability of a below cost sales increases.

Table S-1

Alternative	ASQ*	Change in ASQ from Max PNV Benchmark
Max PNV Benchmark	5.0	0
A - Current Program	26.4	21.4
B - Composite (Preferred)	26.4	21.4
C - Constrained Budget	22.4	17.4
D - Current Budget	27.0	22.0
E - Non-Market Emphasis	21.5	16.5
F - Market Emphasis	28.7	23.7
G - RPA 80	32.8	27.8
H - High Productivity	33.7	28.7

*Allowable sale quantity in MMBF

6. Water and Soil

Water quality will meet State standards under all alternatives. Watershed improvement projects would occur at a moderate pace under High Productivity, Market Emphasis, and the Current Program Alternatives. Under RPA 1980, Non-Market and the Composite Alternatives, improvements would be completed quickly and effectively.

Under all alternatives, watersheds would be protected as a result of coordination with city, county, and state agencies.

Water yield would increase only slightly as the result of timber harvest and other agencies' cloud seeding programs under all alternatives.

In some watersheds, present water yields have increased over natural yields as a result of past timber harvest. Additional increases in water yield will remain low because limited opportunities to manipulate water yield.

The greatest amount of acres maintaining long term soil productivity would occur under the Non-Market, Composite, and Current Program Alternatives. The Constrained Budget, Market, RPA-80, and High Productivity Alternatives would have the greatest amount of acres of declining watershed condition.

On the average, for the planning period, the Non-Market and Constrained Budget Alternatives would have the least amount of increased on-site soil erosion over natural levels while the RPA-80 and High Productivity Alternatives would have the greatest increase.

7. Minerals

The number of acres disturbed by leasable mineral activities (leasables include coal, oil, gas, phosphate, sodium, potassium, oil shale, sulphur, and geothermal steam) are expected to increase each year under all alternatives due to exploration. The number of cases processed under each alternative provides a relative measure of the difference in impacts between alternatives. The greatest number of cases processed are under the Market Alternative. The least number are under the Constrained Budget Alternative.

Mineral activity on mining claims, which involve hardrock minerals that are mined and processed for the recovery of metals, is not expected to vary significantly between alternatives. Hardrock mineral exploration and production is governed by existing laws and regulations. These laws and regulations will apply to all alternatives. Amount of hardrock activity is difficult to predict but is expected to increase gradually throughout the planning period as world demand increases and other sources are exhausted.

8. Lands

Corridors, and/or widows (a linear strip of land identified for present or future location of utility rights-of-way) are provided for under all alternatives.

The principle consequences of utility corridor construction are adverse impacts on soils, water, geology, and scenery. Other problems include inconvenience to the public, construction difficulty, and management of ORV use.

9. Facilities

Building and administrative site repair and maintenance would be limited to health, safety, and energy items in the Current Budget and Constrained Budget Alternatives. The other alternatives provide preventative maintenance, replacement, and repair programs.

Under the Market and Non-Market Alternatives, the collector and local roads will be maintained and reconstructed to a standard suitable to support resource management programs they generate. The RPA 1980, Composite, High Productivity, and Current Program Alternatives will develop and maintain an efficient, safe, and environmentally sound collector and local road system. The Current Budget and Constrained Budget Alternatives will lead to the deterioration of roads.

Mileage of annual road maintenance decreases in the Current Budget and Constrained Budget Alternatives. Market and Non-Market Alternatives have the greatest increase in road maintenance. The Composite Alternative provides for adequate road maintenance.

Bridges will deteriorate and require premature replacement under the Current Budget and Constrained Budget Alternatives. The rest will contain programs for preventative maintenance and repair that will significantly lengthen bridge life and decrease replacement costs.

Fire Protection

A cost effective fire suppression capability based on Level II fire analysis, is maintained under all alternatives. This analysis is aimed at maintaining a fire program that minimizes the sum of suppression and resource costs for all alternatives. Forest direction is to select suppression strategies that minimize costs and resource damages.

Most fuels treatment (removing fuels to reduce fire hazard) will be accomplished primarily through the fuelwood program and/or the use of prescribed fire. The amount needed will be directly related to the volume of timber harvested and the acres made accessible by roads for timber sales. Since the Constrained Budget and Non-Market Alternatives reduce fuels at the lowest rate, they would provide the greatest potential for a large destructive fire in natural fuels.

Economic Effects

The Dixie National Forest is required to consider economic efficiency as a basic principle of planning in the formulation of alternatives, in estimating effects of alternatives, and in evaluating those alternatives.

The main criterion in economic efficiency analysis is present net value (PNV). It is defined as discounted benefits less discounted costs, for those outputs to which monetary values can be assigned. All alternatives examined in that manner were found to be economically efficient.

For comparison, two discount rates were used-four percent, and seven and one eighth percent. The highest PNV with a four percent and seven percent discount is the Composite Alternative. It is followed by the Current Program, Non-Market, Current Budget, Market, Constrained Budget, High Productivity, and RPA 1980 Alternatives.

The planning process recognized that a general relationship exists among the various economic values for Forest resources. The economic values include:

- Actual cash receipts which the Forest collects from the sale of wood, forage, developed recreation, and the use of land.
- Explicitly valued resources for which the Forest receives no cash, but for which an economic value exists, such as, dispersed recreation ($3.00 a recreation visitor day).
- Implicitly valued resources for which no economic value exists, but which can effect resources with explicit values. For example, scenic beauty and wildlife habitat are resources without an economic value, but the amount of them or their quality have an effect on the amount of dispersed recreation use.

In addition to the relationship that exists between the economic values and the resource output patterns, all of which can be identified and described there are speculative and currently unquantified economic values for resources with the potential to be significant, such as, the value of undiscovered mineral and energy deposits.

Further, an intangible value called Net Public Benefit (NPB) enters into any economic analysis in reviewing alternatives. It is defined as the overall value to the nation of all benefits less all associated inputs and costs, regardless if they can be quantitatively valued. It means that some outputs which have no monetary values will be part of the decision making process because of their intrinsic values to people. Examples of such benefits include public safety, concern for future generations and diversity of resources. Such NPB values may cause a decision to be made that varies from a decision based solely on PNV.

Social Effects

Because the Dixie National Forest is in several separate land areas, the economic and social impact of the resources associated with it are fragmented.

The Forest is required to examine impacts to employment, income and population changes in proportion to their significance. The objective of the impact analysis is to compare the socio-economic variables for future conditions in the wood production, ranching, recreation and related industries for all alternatives considered. There were no significant social impacts in any of the eight alternatives considered. However, it is recognized that the planning process primarily examines impacts on communities and masks the impact on individuals. All alternatives after the first decade could have negative effects on individuals associated with the timber industries in some communities.

Two separate payments are made by the Federal Government to the States and Counties each year based on lands administered by the Forest Service or based on Forest Service management actions.

First, Payments in Lieu of Taxes are made based on acres of land in Federal ownership. This is to compensate the States for taxes lost as a result of Federal lands not on State tax rolls. The amount paid is constant between alternatives and is based on Congressional appropriations.

Second, the 25 percent fund provides that a portion of all Forest receipts from timber, grazing, special uses, minerals, and recreation be returned to the counties where they were earned. The funds are to be used for roads and schools. The High Productivity Alternative provides the highest return. In order, the remaining alternatives are: Market, RPA 1980, Composite, Current Program, Current Budget, Non-Market, and Constrained Budget.

Irreversible or Irretrievable Commitments of Resources

An irreversible commitment of resources is one that results from actions altering an area such that it is prevented from returning to its natural condition for an extended period of time, or one that utilizes non-renewable resources, such as cultural resources and minerals. Examples are extraction of oil, natural gas, and gravel.

The key to irreversible consequences in all management actions for the Dixie National Forest is the amount of soil lost because of project activity. Road and building construction creates most impact on soil and vegetative resources.

Irretrievable commitments of resources include lost production or lost use of renewable resources due to different combinations of management practices for each alternative. The opportunity to use the resource is foregone during the period of time it is committed to other uses or periods of non-use.

Adverse Environmental Effects that Cannot Be Avoided

Implementation of any of the alternatives will result in some adverse environmental effects that cannot be avoided. However, the application of the constraints (standards and guidelines) is intended to limit the extent and duration of these effects.

Management prescriptions were designed to provide outputs, goods, and services within the constraints of maintaining the sustained yield of recreation, water, timber, forage, and wildlife without impairing the long-term productivity of the land.

Mitigation measures included in the management area prescriptions in Chapter IV of the Forest Land and Resource Management Plan are intended to minimize the adverse unavoidable effects. There are, however, some adverse effects that cannot be avoided in any of the alternatives. Some of these are summarized as follows:

- unavoidable vegetation loss, and soil compaction from construction and reconstruction activity.
- visual character changes of the Forest scene from management activities including timber harvesting and recreation special uses, and mineral and energy development.
- short-term displacement of wildlife during logging.
- temporary and local reduction of air quality from dust raised by logging.

The intensity of these adverse effects may be mitigated to acceptable levels, but they cannot be avoided entirely.

Short-Term and Long-Term Productivity

Management of the Forest is a complex venture pitting the present demand for goods and services against the need to maintain long-term productivity of the resource base. The proposed action and alternatives to it all meet the requirement of the Multiple Use-Sustained Yield Act of 1960 to provide for the "achievement and maintenance in perpetuity of a high level annual or periodic output of the various renewable resources of the National Forests without impairment of the productivity of the land." The long-term productivity of the land is maintained or improved in all alternatives while producing outputs, goods, and services throughout the planning period.

CHAPTER I
PURPOSE AND NEED

A. INTRODUCTION

This Final Environmental Impact Statement (FEIS) discusses and compares the environmental consequences of eight alternative systems of managing the Dixie National Forest (NF) in the future. The purpose of this FEIS is to disclose the significant physical, biological, economic and social effects of implementing any of the alternatives. It also describes in detail the preferred alternative, which guided the development of the Forest Land and Resource Management Plan (hereinafter called Plan), and discussed the process by which all alternatives were developed. The Plan is a separate document which accompanies this FEIS.

The goal of the proposed Plan is to provide for multiple use and sustained yield of goods and services from the Dixie National Forest in a way that maximizes long term net public benefits in an environmentally sound manner. This is not necessarily the greatest dollar return above costs and includes benefits which cannot be assigned a dollar value. Provisions for revising the Plan are specified in 36 CFR 219.10(9). The Forest Supervisor will review the conditions on the land covered by the Plan at least every five years.

B. NATIONAL, REGIONAL, AND FOREST PLANNING

1. Legislative Framework

Prior to development of the Plan, management of the Dixie National Forest was guided by a series of multiple use, unit, or resource plans. Each of these provided management direction for a specific unit of land or for management of a specific resource such as range, recreation, timber, or wildlife. The Plan will replace all previous plans for resource management.

The Plan is intended to serve as an umbrella for project planning that will implement selected actions. Projects will still require environmental analyses prior to being implemented. A part of these analyses will be to assure that projects conform with direction in the Plan.

When the Plan is implemented, all activities affecting the Forest, including budget proposals, will be brought into compliance. In addition, all permits, contracts, and similar legal documents governing the use and occupancy of National Forest System lands must conform with the Plan. Existing permits, leases, and contracts that are beyond control of the Forest Service will remain in effect until adjustments can be made to accommodate Plan directions.

The National Environmental Policy Act (NEPA) regulations (40 CFR 1500) and the National Forest Management Act of 1976 (NFMA) regulations (36 CFR 219) require the preparation of an Environmental Impact Statement (EIS). The Forest and Rangeland Renewable Resources Planning Act (RPA), as amended by the NFMA, requires preparation of the Plan, including an EIS.

The NEPA and NFMA requirements have many elements in common. Both require public involvement, the preparation and evaluation of alternatives, protection of the environment, long range planning, monitoring, follow-up, and modifications where necessary. Many of the requirements and procedures of NEPA are built into the NFMA planning system.

The Dixie National Forest is only one of the many National Forests involved in the same planning process following the same National directives. The total National Forest Planning effort is three-tiered:

1. The National Level
2. The Regional Level
3. The Forest Level

The National level deals primarily with National Forest planning, policy making, funding, monitoring, and legislative activities. The Regional role is one of clarifying and interpreting policy, providing additional direction and coordination, as well as providing expertise upon request. Individual Forests are charged with Forest land and resource management, within National and Regional direction, from a local perspective.

2. Planning Process

Regulations to implement the requirements of the National Forest Management Act were promulgated on September 30, 1982, by 47 FR 43037, 36 CFR 219. Those regulations outline in detail how the proposed Plan is to be prepared. The actions required by the National Forest planning regulations set forth in 36 CFR 219.12 and used in the planning process are as follows:

1. Identification of purpose and need.
2. Development of planning criteria.
3. Collection of inventory data and information.
4. Analysis of the management situation.
5. Formulation of alternatives.
6. Estimation of effects of alternatives.
7. Evaluation of alternatives.
8. Recommendation of a preferred alternative.
9. Approval of Plan.
10. Monitoring and evaluation of Plan.

Planning on individual National Forests is coordinated within National and Regional Planning as required by the laws cited above and the regulations for implementing them. The Regional Guide establishes management standards and guidelines, provides planning guidance for regionally significant issues and concerns, and distributes national goals and targets from the 1980 RPA to individual Forests. The Forest planning process deals with achieving those goals and addressing local issues and concerns.

The title page of this document states the time allowed for public comment. Part of step 7 was development of a preferred alternative. The preferred alternative (proposed action) is the basis for the Plan for the Dixie National Forest detailed in the accompanying document. After the close of the comment period, the Forest will repeat Planning actions 1 through 7 as necessary. A Final Environmental Impact Statement (FEIS) will then be prepared, filed with the Environmental Protection Agency, and made available to the public. The

Regional Forester will use the FEIS to make a decision under NFMA for approval of the Forest Plan (36 CFR 219.10) documented in the Record of Decision.

C. LOCATION OF THE FOREST

The Dixie National Forest is located in southwestern Utah and is in Washington Iron, Garfield, Kane, Wayne, and Piute Counties. The Forest covers 1,967,187 acres. Included within the Forest boundaries are 1,883,734 acres of National Forest Land, 78,899 acres of privately owned land, and 4,554 acres of State of Utah Land.

A vicinity map is found on page I-7.

The Forest Supervisor is headquartered in Cedar City. The Forest is divided into five ranger districts shown below:

Ranger Districts	Location of Office
Pine Valley	St. George, Utah
Cedar City	Cedar City, Utah
Powell	Panguitch, Utah
Escalante	Escalante, Utah
Teasdale	Teasdale, Utah

D. ISSUES, CONCERNS, AND OPPORTUNITIES

Dixie National Forest personnel began the process of identifying public issues, management concerns, and resource use and development opportunities by reviewing existing unit plans, resource plans, and various data files. A long list of items was generated from this process. The items were then grouped and revised into a preliminary list of 12 issues and concerns. The purpose of identifying issues and concerns is to determine the benefits that people want in the form of goods, services, uses, and environmental conditions. The public participation process (which was then started) included a notice published in the Federal Register, announcements in newspapers and by mail, and a series of "open houses" at each Ranger Station. The responses received during this process were used to expand and revise the list into 14 issues and concerns.

On October 7, 1983, the planning regulations in 36 CFR 219-17 were revised to require the re-evaluation of all roadless areas and consideration of a wide range of wilderness designations in Forest plan alternatives. A public participation process was carried out for the re-evaluation of roadless areas on the Forest. Two new issues and concerns were generated from this process. On September 28, 1984, the Utah Wilderness Act of 1984 was signed into law. This Act settled the question of how many acres on the Forest should be designated as Wilderness for the current planning process. The matter of Wilderness classification is treated the same in each of the eight alternatives discussed in this DEIS. No further wilderness evaluations were made, which is in accordance with the Utah Wilderness Act. Planning issues 15 and 16 are no longer relevant to Forest Planning and have been dropped from consideration in this EIS.

A complete discussion of the issues and concerns, identification, and screening process is found in Appendix A.

Following is a summary list of the issues and concerns addressed in this document:

Summary of the Issues and Concerns

Based on public responses and concerns of management, the following issues and concerns were identified by the Dixie National Forest Interdisciplinary (ID) Team as being significant and should be addressed in the Forest Plan:

1. To what degree should the Dixie NF place a greater emphasis on fire management?

2. How much of an increased demand on Forest resources should be anticipated?

3. To what degree should the Dixie NF consider economic and social stability of communities dependent on Dixie NF resources?

4. To what extent should the Dixie NF accelerate the harvest of overmature timber to reduce mortality losses?

5. To what extent should the Dixie NF emphasize wildlife management?

6. How should the Dixie NF manage its firewood resources?

7. What level of livestock use should be planned for?

8. How should the Dixie NF protect the on-site values of streams, lakes, springs, riparian areas, and their associated fishery values?

9. How should the Dixie NF coordinate the exploration, leasing, and development of energy and mineral resources, including location of energy transmission corridors, with other resource values?

10. How much emphasis should the Dixie NF place on coordinating or restricting Forest activities in order to maintain or enhance scenic values along major roads, other travel corridors, and areas of outstanding scenic quality?

11. What should the balance be between accommodating increased recreation use and other resource uses?

12. Should the Dixie NF emphasize developed group sites over single family units when considering new recreation site construction?

13. What should be done to separate the recreational activities of conflicting user groups such as cross-country skiers and snowmobilers?

14. How much emphasis should we put on a transportation system that is safe and convenient for public use?

The financial difference between timber sale receipts and expenditures is an emerging national issue. This controversy has been labeled "below cost sales" and it centers around the contention that some Forest Service timber sales lose money. These sales are said to lose money because they cost more to prepare and administer than they return in receipts. This controversy is not easy to resolve as it involves many complex relationships including, accounting practices and sales policies, multiple-use management, timber market conditions and the role of National Forests in the local economies.

This issue may be applicable to the Dixie NF since the timber program in recent years has failed to recover the direct costs of timber management. Even though the ability of an individual timber sale to recover costs is not a specific criterion for the determining the suitable timber base, economics was considered in the development of alternatives. The suitable timber base is composed of the set of lands that are economically efficient in meeting timber production and other resource goals.

Further discussion of the below cost sale issue is incorporated throughout this document. Chapter II defines the below cost sales issue in more detail and compares alternatives with regard to below cost sales. Chapter III provides the historical perspective of timber sale "cash flow". Chapter IV illustrates specific instances where below cost sales may be an effective means of achieving other resource objectives.

E. Planning Records

The planning records contain the detailed information used in developing the Plan as required in 365 CRR 219.10(h).

These planning records are available for inspection during regular business hours at the Dixie National Forest Supervisor's Office, 82 North 100 East, Cedar City, Utah.

F. ORGANIZATION OF DEIS

The Draft Environmental Impact Statement is structured as follows:

Chaper II explains the process of developing alternatives, including benchmarks, and describes and compares alternatives, including the preferred alternative.

Chapter III describes the affected environment, which is the land, resources, and activities managed by the Dixie National Forest.

Chapter IV predicts the environmental consequences of implementing each alternative and includes discussions of the short and long-term effects and the irreversible and irretrievable commitments of resources.

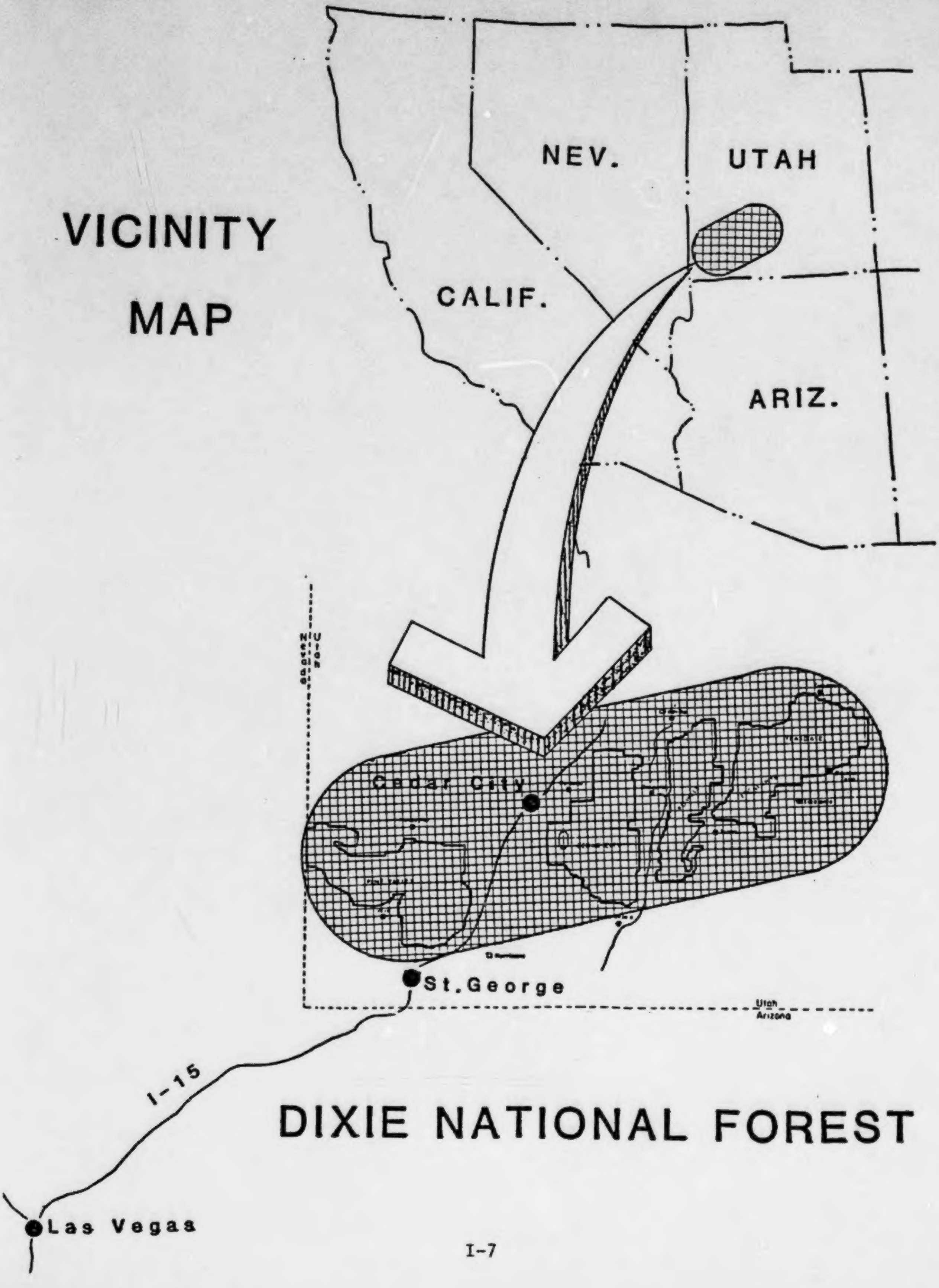
Chapter V lists the names and qualifications of the major contributors to the plan and EIS.

Chapter VI lists the agencies, organizations, and persons to whom copies of the EIS were sent.

Chapter VII contains the Index.

The Appendix material is contained in a separate document and includes:

- **Appendix A. Issues, Concerns and Opportunities.**
- **Appendix B. Description of the Analysis Process.**
- **Appendix C. Glossary.**
- **Appendix D. Transportation and Utility Corridor Evaluation.**
- **Appendix E. Withdrawal Review Schedule**
- **Appendix F. Regional Direction Concerning Minerals**
- **Appendix G. Interagency Agreement for Mineral Leasing**
- **Appendix H. Approved Special Stipulations**
- **Appendix I. Coal Unsuitability Classification**


VICINITY MAP
NEV.
UTAH
CALIF.
ARIZ.
Nevada
Utah
Cedar City
St. George
Utah
Arizona
I-15
Las Vegas
DIXIE NATIONAL FOREST

CHAPTER II
ALTERNATIVES INCLUDING THE PROPOSED ACTION

A. OVERVIEW

This chapter describes and compares the range of alternatives analyzed in the Forest planning process, including the Proposed Action (Composite Alternative). The section titled, Alternative Development Process explains the NEPA and NFMA regulations that govern alternative development. It discusses how alternatives were formulated, the range of alternatives, and the set of management prescriptions in each alternative. The section also discusses the role of economics in alternative formulation. The section titled, Role and Use of Benchmarks describes benchmark levels and their quantitative analysis. This is used to define the decision space used in formulating alternatives. "Alternatives Considered and Eliminated from Detailed Study" describes three alternatives and the reasons for eliminating them from detailed study. The section "Alternatives Considered in Detail" displays the eight alternatives considered in detail. This includes the Proposed Action. The alternatives are summarily described with goals, objectives, and a description of the future condition of the Forest. The chapter concludes by comparing the eight alternatives considered in detail. This comparison includes land use allocations by management prescription, average annual outputs of selected resources, and detailed comparison of resources for a selected time period. The comparison also displays social and economic effects of implementing the alternatives.

B. ALTERNATIVE DEVELOPMENT PROCESS

NEPA regulations require an evaluation of an array of reasonable alternatives to the Proposed Action, including a "no action" alternative. The regulations require the Forest to analyze alternatives not within the agency's jurisdiction. The regulations also require identification and discussion of alternatives eliminated from detailed study.

NFMA regulations include criteria to guide alternative development. These criteria are:

- Each alternative will be capable of being achieved.
- A "no action" alternative will be formulated that is the most likely future condition if current management direction continues unchanged.
- Each alternative will provide for the orderly elimination of backlogs of needed treatment for the restoration of renewable resources as necessary to achieve the multiple-use objectives of the alternative.
- Each public issue and management concern will be addressed in one or more alternatives.
- Each alternative will represent, to the extent practicable, the most cost-efficient combination of management activities that can meet the objectives established in the alternative.

The NFMA regulations also require that each alternative display:

- The condition and uses that will result from long-term application of the alternative.

- The goods and services to be produced, and the timing and flow of these resources outputs.
- Resource management standards and guidelines.

An alternative is a specific combination of management prescriptions and associated cost and output schedule. Management prescriptions apply only to National Forest System land. A variety of prescription combinations are possible in formulating a reasonable range of alternatives.

Prescriptions are management activities selected for specific land areas to attain multiple-use goals and objectives. Alternatives vary by changing acres and prescription location. Prescriptions for the Management Areas are displayed in Chapter IV, Management Direction, of the Plan.

The prescriptions contain mitigation measures. Mitigation ensures long-term land productivity is not impaired under any alternative.

Each alternative is economically efficient in terms of present net value (PNV) and benefit/cost ratio. Present net value is total discounted benefits minus total discounted costs associated with providing outputs.

Present net value (PNV) is the measure of economic efficiency used in Forest Planning. It is defined as the difference between the discounted dollar value of all priced outputs and the discounted value of all expenditures for management and investment (the process of discounting expresses all values at a common date). "PNV" is one important component or effect that is included in net public benefits. Any differences in PNV among alternatives may be related to the production of public benefits to which prices have not been assigned. Such benefits include outputs, such as endangered animals; physical conditions, such as the maintenance of areas with particularly pleasing visual qualities; and desirable distributive effects, as when especially high levels of commodities are produced to help support dependent communities. Included are reductions in risk, such as those due to intensifications of insect and disease surveys, and improvements in quality, such as those due to increasing recreation site management standards. Similarly, differences in PNV may be related to the production of public benefits to which prices have been assigned. Further, differences in PNV may be directly related to the budget restrictions associated with the alternatives.

An important purpose of this section is to define the difference in the production of public benefits among alternatives that lead to the differences in PNV.

The planning process recognized that a general relationship exists among the various economic values for forest resources. The economic values include:

- Actual cash receipts which the forest collects from the sale of wood, forage, developed recreation and the use of land.
- Explicitly valued resources for which the forest receives no cash, but for which an economic value exits; such as, dispersed recreation ($3.00 a recreation visitor day).

- Implicitly valued resources for which no economic value exists but which can affect resources with explicit values. For example, scenic beauty and wildlife habitat are resources with out an economic value but the amount of or quality of them have an effect on the amount of dispersed recreation.

In addition to the relationship that exists between the economic values and the resource output patterns, all of which can be identified and described, there are speculative and currently unquantified economic values for resources with the potential to be significant; such as the value of undiscovered mineral and energy deposits.

There can be significant off-forest economic and social effects to the area influenced by the forest's activities and policies. In particular, there could be impacts to jobs in the wood production, ranching and recreation industries due to changes made in the management of the forest. The significance of the impacts would vary with the degree of industry and community dependence on the forest's resources.

The Formulation of Alternatives (Planning Action 5) is the culmination of Planning Actions 1 through 4. The following summarizes these steps:

Step 1. Major public issues are identified through public involvement and coordination with other local, State, and Federal agencies. Management concerns were identified through an internal analysis.

Step 2. Public issues and management concerns are converted into a set of general planning goals.

Step 3. Multiple use management prescriptions are developed. These prescriptions represent sets of compatible management practices, and are designed to address planning goals.

Step 4. Data were collected and stored in the Forest resource data base.

Step 5. Potential locations for applying the management prescriptions were identified through site-specific capability and suitability analysis.

Step 6. Potential production levels were estimated for each resource.

Step 7. Demand and supply levels were estimated for the various resources. The need to change current management direction was identified.

Step 8. A broad range of alternatives was developed. These alternatives address the needed changes in management direction. Each alternative responds to planning questions differently.

Step 9. Objectives for each planning goal were identified.

Step 10. The linear program model, FORPLAN, was used to estimate the goods and services from timber management that could actually be produced by each alternative. The model is a mathematical process that determines the most cost-efficient prescription mix which achieves a desired goal. The model schedules outputs and calculates costs over time.

Step 11. The land use assignments and output schedules were validated. Unacceptable management conflicts were resolved.

Step 12. The land use assignments were mapped and re-analyzed to test the original constraints and to ensure maximum economic efficiency.

Step 13. Steps 9 through 12 were repeated to define the reasonable range of alternatives.

Alternatives considered in the planning effort can be grouped into two categories: those considered and eliminated from detailed study and those considered in detail. Three alternatives, Minimum Wilderness, Maximum Wilderness, and Market Emphasis with Timber Departure were considered and eliminated from detailed study. The Wilderness Alternatives were eliminated from further study after the passage of the Utah Wilderness Act. Eight alternatives were considered in detail and discussed in detail later in this chapter.

C. ROLE AND USE OF BENCHMARKS

Benchmark level analysis was conducted to define the decision space (The parameters within which the decision must be made) used in formulating alternatives. This analysis provided the basis for examining and displaying the trade-offs and effects associated with the benchmark levels and alternatives. The quantitative results of the benchmarks will be used as reference points for comparing alternatives.

Benchmarks differ from alternatives because, generally, benchmarks describe a maximum or minimum level of resource activities and outputs without regard for multiple use considerations. Benchmarks are not intended to be implementable, whereas alternatives reflect multiple use considerations and are fully implementable. The Current Program Alternative is an exception in that it is also displayed as a benchmark for comparison purposes.

Five benchmark levels were analyzed. Each benchmark level is subject to the laws and regulations that govern National Forest System Management. However, benchmarks are not constrained by local, Regional, or National policy. All benchmarks are designed to maintain land productivity.

Constraints vary by benchmark, but are applied to help ensure that each benchmark can be approximately implementable. These constraints are presented in Appendix B.

Each benchmark has a specific objective. This objective is reflected in the objective function, constraints, and the assumptions made for that benchmark. Appendix B has a benchmark comparison, and presents economic analysis and average annual output by resource. Benchmark summaries of outputs, costs, benefits, and cash flows are located in Tables II-1 to II-5(5)a in the following section. Tables II-6, 7 and 8 provide an economic comparison of the benchmarks.

1. Minimum Level Benchmark

This Benchmark level estimates a minimum level of management. It will comply with applicable laws and regulations, including prevention of significant or permanent impairment of long-term land productivity, and which would be needed to maintain the Forest as part of the National Forest System and to manage uncontrolable outputs and uses. Management activities that occur at this level include fire suppression, insect and disease control, minerals management, non-induced recreation. Incidental outputs include dispersed recreation use, wildlife.

The following conclusions can be drawn from the Minimum Level Benchmark. Few outputs requiring Forest Service funding will be produced. Dispersed recreation, minerals, wilderness use, wildlife, fish, and water will continue to be available on the Forest.

Many grazing permittees depend on National Forest System grazing to supplement their livestock operation. Grazing is not a Minimum Level Benchmark output, as a result, some ranchers will be immediately put out of business. Others may consolidate available private, State, or other Federal grazing opportunities and remain in business.

Similarly, most local sawmill operators rely on National Forest System timber and many will be forced out of business. Some operators may use other Federal timber to remain in business.

New public issues will result from minimum level management. People will find access to the Forest reduced and in some cases eliminated. Wildlife habitat improvements will not exist. No developed recreation opportunities will exist. If the Forest is to remain open, other agencies at the State and local level will have to maintain roads.

Benchmark Disposition. This benchmark was dropped from further study as an alternative because it does not provide adequate levels of outputs.

2. Maximum Present Net Value Based on Established Market Prices Benchmark

This Benchmark level estimates the mix of resource uses and an output and cost schedule which will maximize the present net value of timber, range, and developed recreation.

The following conclusions can be drawn from this Benchmark. The first decade timber harvest is 5.0 million board feet (MMBF) per year. This is the most efficient harvest level required for this Benchmark. The most economically efficient level of range production is 110,000 animal unit months (AUM's) a year and developed recreation capacity is 474,000 recreation visitor days (RVD's) a year.

Management for market output resources will contribute to increased outputs for non-market goods. As aspen is harvested, plant species favorable to big game are established on the site. The increased food availablility has the potential to increase the National Forest System summer range carrying capacity. Timber management requires road construction in areas which are not currently roaded. The additional roads increase capacity for motorized recreation. The capacity for non-motorized recreation decreases. However, the overall dispersed recreation capacity increases. Present net value more than doubles and the cost to produce the outputs are eight times greater than the Minimum Level Benchmark over the first ten years.

Benchmark Disposition. This benchmark was dropped from further study because it did not assign values to all resource outputs, such as dispersed recreation and increased water yield.

3. Maximum Present Net Value Including Assigned Values Benchmark

This Benchmark level estimates the mix, output, and cost schedule which will maximize the present net value of outputs for timber, range, developed recreation, dispersed recreation, and increased water yield.

The purpose of the Maximum PNV Benchmark, which uses assigned values, is to provide a basis for computing the opportunity costs (net benefits foregone) of the alternatives. The difference between the PNV of this benchmark level and the PNV of each alternative is the opportunity cost of that alternative. The PNV trade-off analysis, along with the economic impact analysis and cost-efficiency summary of the alternatives, is displayed in the last section of this Chapter. Present Net Value trade-off is presented in Appendix B.

The following conclusions can be drawn from Maximum PNV Benchmark (assigned values). The first decade timber harvest is 5.0 MMBF/year. This is the most efficient harvest level required for this Benchmark. Water yield increases are due to the acres cut over in the Benchmark. The most economically efficient range production level is 110,000 AUM's per year.

Benchmark Disposition. This benchmark was not used for further study because it was not structured to meet multiple use resource requirements.

4. Maximum Timber Level

This Benchmark level estimates the maximum timber output capabilities of the Forest. This will establish the biological potential without impairing land productivity. The timber output schedule is the maximum that could be produced in the first decade subject to the constraint of non-declining yield. All land classified as available and tentatively suitable for timber production was used in the analysis to determine the maximum timber volume that could be scheduled for harvest.

The following conclusions can be drawn from this Benchmark. Timber producing activities are considered more efficient than non-timber producing activities. There is no change in recreation or wilderness outputs. Grazing outputs increase only slightly because transitory range is not made available for grazing.

Benchmark Disposition. This benchmark was not considered in detail because it was not structured to meet multiple use resource requirements and to satisfy issues and concerns.

5. Maximum Range Level Benchmark

This Benchmark level estimates maximum range output capabilities of the Forest. This will establish the upper limit for range production without impairing land productivity. Timber harvest will be used to help achieve maximum range outputs.

All land classified as available and tentatively suitable for timber production was used in the analysis. A timber harvesting prescription was used on timbered grazing land to maximize forage production. All land suitable for range production was used in the analysis.

The following conclusions can be drawn from this Benchmark. Livestock producing activities are considered more efficient than activities that do not reduce livestock grazing opportunities.

Benchmark Disposition. This benchmark was not considered in detail because it was not structured to meet multiple use resource requirements and to satisfy issues and concerns.

6. Current Program Level Benchmark

This benchmark estimates the continuation of current management direction for the entire planning period. The first decade timber harvest level remains at or near historical levels and then declines before rising again at the end of the planning period. The decline reflects that current harvest levels cannot be continued until second-growth timber reaches merchantable size. Grazing levels remain at current levels, while recreation and minerals increase in response to increased demands.

Benchmark Disposition

This benchmark was carried forward as an alternative considered in detail and is fully described in Section E of this Chapter (Alternative A).

D. Resource Outputs, Activities, Costs and Benefits For Benchmarks

The following tables display comparisons of benefits and costs for individual resources. Direct comparisons of benefits and costs displayed for individual resource outputs provide general indications of relationships but may be misleading because some outputs in multiple use management have common costs of production that cannot be easily separated and attributed to individual resources.

D. ALTERNATIVES CONSIDERED AND ELIMINATED FROM DETAILED STUDY

Three alternatives were dropped from further study. The rationale for dropping the alternatives is explained below:

Maximum Wilderness. This alternative was designed to display the effects of recommending all of the qualifying roadless areas for Wilderness. Passage of the Utah Wilderness Act of 1984 eliminated the need to display the information. The act did, however, designate 3 wilderness areas totaling 83,000 acres. This designation remains constant in all benchmarks and all alternatives.

Minimum Wilderness. This alternative was designed to display the effects of recommending none of the qualifying roadless areas as Wilderness. Passage of the Utah Wilderness Act of 1984 eliminated the need to display the

TABLE II-1
RESOURCE OUTPUTS, ACTIVITIES, COSTS AND BENEFITS FOR BENCHMARK/MINIMUM LEVEL*

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE						
		1	2	3	4	5	10	15
Recreation								
Developed Recreation Use								
Rural ROS	MRVD	92	92	92	92	92		
Road Natural ROS		92	92	92	92	92		
Dispersed Recreation Use								
Primitive ROS	MRVD	300	330	360	360	360		
Semi-Primitive								
Non-Motor ROS		300	330	360	360	360		
Semi-Primitive								
Motorized ROS								
Road Natural ROS								
Rural ROS								
Dispersed Recreation Use (Wild.)								
Primitive ROS	MRVD	55	75	90	90	90		
Semi-Primitive		55	75	90	90	90		
Non-Motor ROS								
Wilderness								
Wilderness Management								
Wildlife	MACRES	83	83	83	83	83		
Structural Habitat Improvement-(Terrestrial)	STRUCTS							
Structural Habitat Improvement-Aquatic	STRUCTS							
Nonstructural Habitat Improvement-Terrestrial	ACRES							
Nonstructural Habitat Improvement-Aquatic	ACRES							
Wildlife and Fish Use								
Range	MWFUD	171	154	138	125	126		
Grazing Use (Livestock)								
Wild Horses & Burros	MAUM							
Timber	MAUM	0.3	0.3	0.3	0.3	0.3		
Allowable Sale Quantity	MMCF							
Allowable Sale Quantity	MMBF	0	0	0	0	0	0	0
Sawtimber (Softwood)	MMBF	0	0	0	0	0	0	0
Sawtimber (Hardwood) **	MMBF	0	0	0	0	0	0	0
Roundwood Products	MMBF	0	0	0	0	0	0	0
Fuelwood	MMBF	0	0	0	0	0	0	0
Reforestation	ACRES	0	0	0	0	0	0	0
TSI	ACRES							
Water								
Meeting Water Quality Goals	%	98	98	98	98	98		
Increased Yield Over Natural-Forest-Wide	M AC.FT.							
Increased Yield Over Natural-Colorado River	M AC.FT.	0	0	0	0	0		
Protection		0	0	0	0	0		
Fuelbreaks and Fuel Treatment	ACRES							

* Entries in the following tables are on an average annual basis for the decade.

** Aspen could have been displayed as roundwood rather than sawtimber in the following tables. Higher sawtimber merchantability standards were applied to aspen providing conservative volume estimates as were conservative fuelwood benefit values.

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE 1	2	3	4	5	10	15
Minerals								
Mineral Leases and Permits	CASES	300	350	310	290	290		
HC&D								
Human Resource Programs	EN.YEARS							
Lands								
Land Pur., Acq., & Exchange	CASES							
Soils								
Soil & Water Resource Imp.	ACRES							
Facilities								
Arterial and Collector Roads Construction/Reconstruction	MILES							
Local Roads								
Construction	MILES							
Reconstruction	MILES							
Trail Construction/Rconstruction	MILES							
BENEFITS M$*								
Recreation								
Developed		13	13	13	13	13		
Dispersed		3843	4475	4994	4994	4994		
Wilderness		607	827	993	993	993		
Total		4463	5315	6000	6000	6000		
Range		0	0	0	0	0		
Timber		0	0	0	0	0		
Wildlife		4840	4353	3844	3431	3459		
Water Yield		0	0	0	0	0		
Minerals		1712	1841	1841	1841	1841		
Other		21	21	21	21	21		
Total		11036	11530	11706	11293	11321		
RECEIPTS M$								
Recreation - Developed		13	13	13	13	13		
Range		0	0	0	0	0		
Timber		0	0	0	0	0		
Minerals		5	6	6	5	5		
Other		21	21	21	21	21		
Total		39	40	40	39	39		
COSTS M$								
Timber		0	0	0	0	0		
Roads (Appropriated)		0	0	0	0	0		
Recreation		140	155	170	170	170		
Wildlife		0	0	0	0	0		
Range		0	0	0	0	0		
Protection		190	190	190	190	190		
Other		375	417	424	430	426		
Total Forest Budget		705	762	784	790	786		
O&M		705	762	784	790	786		
Investment		0	0	0	0	0		
Non-Forest Service Costs (Purchaser Const. Roads)		0	0	0	0	0		
Returns to Treasury		39	40	40	39	39		

* Dollar amounts in the following tables are average annual for the decade expressed in 1978 dollars, inflated to 1/1/82.

TABLE II-1a
AVERAGE ANNUAL CASH FLOWS AND NON-CASH BENEFITS *
(Thousands of 1978 Dollars Inflated to 1/1/82)

BENCHMARK - MINIMUM LEVEL	DECADE 1	2	3	4	5
Timber					
Costs*	0	0	0	0	0
Benefits	0	0	0	0	0
Net Benefits	0	0	0	0	0
Receipts	0	0	0	0	0
Net Receipts	0	0	0	0	0
Non-Cash Benefits	0	0	0	0	0
Recreation					
Costs	140	155	170	170	170
Benefits	4463	5315	6000	6000	6000
Net Benefits	4323	5160	5830	5830	5830
Receipts	13	13	13	13	13
Net Receipts	-127	-142	157	-157	-157
Non-Cash Benefits	4450	5302	5987	5987	5987
Wildlife					
Costs	0	0	0	0	0
Benefits	4840	4353	3844	3431	3459
Net Benefits	4840	4353	3844	3431	3459
Receipts	0	0	0	0	0
Net Receipts	0	0	0	0	0
Non-Cash Benefits	4840	4353	3844	3431	3459
Range					
Costs	0	0	0	0	0
Benefits	0	0	0	0	0
Net Benefits	0	0	0	0	0
Receipts	0	0	0	0	0
Net Receipts	0	0	0	0	0
Non-Cash Benefits	0	0	0	0	0
Other					
Costs	565	607	614	620	616
Benefits	1733	1862	1862	1862	1862
Net Benefits	1168	1255	1248	1242	1246
Receipts	26	27	27	26	26
Net Receipts	-539	-580	-587	-594	-590
Non-Cash Benefits	1707	1835	1835	1836	1836
Total					
Costs	705	762	784	790	786
Benefits	11036	11530	11706	11293	11321
Net Benefits	10331	10768	10922	10503	10535
Receipts	39	40	40	39	39
Net Receipts	-666	-722	-744	-751	-747
Non-Cash Benefits	10997	11490	11666	11254	11282

* Includes Non-Forest Service Costs (Purchaser Constructed Roads)

TABLE II-2
RESOURCE OUTPUTS, ACTIVITIES, COSTS AND BENEFITS FOR BENCHMARK/MAXIMUM PNV MARKET VALUES

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE						
		1	2	3	4	5	10	15
Recreation								
Developed Recreation Use	MRVD	474	651	1060	1936	2813		
Rural ROS		261	358	583	1065	1547		
Road Natural ROS		213	298	477	871	1266		
Dispersed Recreation Use	MRVD	659	781	1479	2121	2642		
Primitive ROS								
Semi-Primitive Non-Motor ROS		66	78	148	212	264		
Semi-Primitive Motorized ROS		165	195	370	530	660		
Road Natural ROS		330	391	739	1061	1321		
Rural ROS		99	117	221	318	396		
Dispersed Recreation Use (Wild.)	MRVD	8	10	16	23	28		
Primitive ROS		8	10	16	23	28		
Semi-Primitive Non-Motor ROS								
Wilderness								
Wilderness Management	MACRES	83	83	83	83	83		
Wildlife								
Structural Habitat Improvement-(Terrestrial)	STRUCTS							
Structural Habitat Improvement-Aquatic	STRUCTS							
Nonstructural Habitat Improvement-Terrestrial	ACRES							
Nonstructural Habitat Improvement-Aquatic	ACRES							
Wildlife and Fish Use	MWFUD	171	154	138	125	126		
Range								
Grazing Use (Livestock)	MAUM	110	107	105	103	100		
Wild Horses & Burros	MAUM	0.3	0.3	0.3	0.3	0.3		
Timber								
Allowable Sale Quantity	MMCF	1.1	1.1	2.9	2.9	3.2	3.2	3.2
Allowable Sale Quantity	MMBF	5.0	5.3	17.0	14.3	14.8	15.4	12.1
Sawtimber (Softwood)	MMBF	4.7	4.5	16.6	12.0	9.7	12.6	11.0
Sawtimber (Hardwood)	MMBF	0	0.5	0	1.9	4.7	2.4	0.8
Roundwood Products	MMBF	0.3	0.3	0.4	0.4	0.4	0.4	0.3
Fuelwood	MMBF	1.6	1.6	5.5	5.2	3.7	3.5	3.0
Reforestation	ACRES	26	57	169	107	292	1954	118
TSI	ACRES	0	500	0	45	1062	0	1344
Water								
Meeting Water Quality Goals	%	98	98	98	98	98		
Increased Yield Over Natural-Forest-Wide	M AC.FT.	2.6	1.6	0.9	1.0	1.5		
Increased Yield Over Natural-Colorado River	M AC.FT.	0.5	0.3	0.3	0.6	0.8		
Protection								
Fuelbreaks and Fuel Treatment	ACRES							

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE 1	2	3	4	5	10	15
Minerals								
Mineral Leases and Permits	CASES	300	350	310	290	290		
HC&D								
Human Resource Programs	EN.YEARS							
Lands								
Land Pur., Acq., & Exchange	CASES							
Soils								
Soil & Water Resource Imp.	ACRES							
Facilities								
Arterial and Collector Roads Construction/Reconstruction	MILES	0	0	0	0	0		
Local Roads								
Construction	MILES	5	2	2	2	2		
Reconstruction	MILES	1	1	1	1	1		
Trail Construction/Rconstruction	MILES							
BENEFITS M$								
Recreation								
Developed		1962	2694	4386	8014	11642		
Dispersed		7176	7741	11184	13171	15348		
Wilderness		91	105	182	253	310		
Total		9229	10540	15752	21438	27300		
Range		887	862	847	830	806		
Timber		369	316	963	982	626		
Wildlife		4840	4353	3844	3431	3459		
Water Yield		152	93	52	58	88		
Minerals		1712	1841	1841	1841	1841		
Other		21	21	21	21	21		
Total		17210	18026	23320	28601	34141		
RECEIPTS M$								
Recreation - Developed		184	247	395	710	1026		
Range		111	108	106	104	101		
Timber		359	306	950	969	613		
Minerals		5	6	6	5	5		
Other		21	21	21	21	21		
Total		680	688	1478	1809	1766		
COSTS M$								
Timber		329	230	293	868	581		
Roads (Appropriated)		57	24	24	24	24		
Recreation		888	970	1374	2535	3527		
Wildlife		67	77	85	103	125		
Range		240	234	229	224	228		
Protection		685	680	334	334	334		
Other		733	749	805	992	853		
Total Forest Budget		2999	2964	3144	5080	5672		
O&M		2567	2624	2398	3094	3071		
Investment		432	340	746	1986	2601		
Non-Forest Service Costs (Purchaser Const. Roads)		34	18	42	94	65		
Returns to Treasury		680	688	1478	1809	1766		

TABLE II-2a
AVERAGE ANNUAL CASH FLOWS AND NON-CASH BENEFITS *
(Thousands of 1978 Dollars Inflated to 1/1/82)

	DECADE				
BENCHMARK - MAXIMUM PNV MARKET	1	2	3	4	5
Timber					
Costs*	363	248	335	962	646
Benefits	369	316	963	982	626
Net Benefits	6	68	628	20	-20
Receipts	359	306	950	969	613
Net Receipts	-4	58	615	7	-33
Non-Cash Benefits	10	10	13	13	13
Recreation					
Costs	888	970	1374	2535	3527
Benefits	9229	10540	15752	21438	27300
Net Benefits	8341	9570	14378	18903	23773
Receipts	184	247	395	710	1026
Net Receipts	-704	-723	-979	-1825	-2501
Non-Cash Benefits	9045	10293	15357	20728	26274
Wildlife					
Costs	67	77	85	103	125
Benefits	4840	4353	3844	3431	3459
Net Benefits	4773	4276	3759	3328	3334
Receipts	0	0	0	0	0
Net Receipts	-67	-77	-85	-103	-125
Non-Cash Benefits	4840	4353	3844	3431	3459
Range					
Costs	240	234	229	224	228
Benefits	887	862	847	830	806
Net Benefits	647	628	618	606	578
Receipts	111	108	106	104	101
Net Receipts	-129	-126	-123	-120	-127
Non-Cash Benefits	776	754	741	726	705
Other					
Costs	1475	1453	1163	1350	1211
Benefits	1885	1955	1914	1920	1950
Net Benefits	410	502	751	570	739
Receipts	26	27	27	26	26
Net Receipts	-1449	-1426	-1136	-1324	-1185
Non-Cash Benefits	1859	1928	1887	1894	1924
Total					
Costs	3033	2982	3186	5174	5737
Benefits	17210	18026	23320	28601	34141
Net Benefits	14177	15044	20134	23427	28404
Receipts	680	688	1478	1809	1766
Net Receipts	-2353	-2294	-1708	-3365	-3971
Non-Cash Benefits	16530	17338	21842	26792	32375

* Includes Non-Forest Service Costs (Purchaser Constructed Roads)

TABLE II-3
RESOURCE OUTPUTS, ACTIVITIES, COSTS AND BENEFITS FOR BENCHMARK/MAXIMUM PNV ASSIGNED VALUES

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE						
		1	2	3	4	5	10	15
Recreation								
Developed Recreation Use	MRVD	474	651	1060	1652	2010		
Rural ROS		261	358	583	909	1105		
Road Natural ROS		213	293	477	743	843		
Dispersed Recreation Use	MRVD	806	1070	1708	2656	3604		
Primitive ROS								
Semi-Primitive Non-Motor ROS		114	151	242	376	510		
Semi-Primitive Motorized ROS		244	324	518	805	1092		
Road Natural ROS		366	486	776	1207	1638		
Rural ROS		81	108	173	268	364		
Dispersed Recreation Use (Wild.)	MRVD	4	7	10	17	25		
Primitive ROS		4	7	10	17	25		
Semi-Primitive Non-Motor ROS								
Wilderness								
Wilderness Management	MACRES	83	83	83	83	83		
Wildlife								
Structural Habitat Improvement-(Terrestrial)	STRUCTS	15	26	32	32	33		
Structural Habitat Improvement-Aquatic	STRUCTS	39	44	33	15	15		
Nonstructural Habitat Improvement-Terrestrial	ACRES	2130	2550	2652	2652	2652		
Nonstructural Habitat Improvement-Aquatic	ACRES	230	230	145	150	150		
Wildlife and Fish Use	MWFUD	170	188	185	184	185		
Range								
Grazing Use (Livestock)	MAUM	110	107	105	103	100		
Wild Horses & Burros	MAUM	0.3	0.3	0.3	0.3	0.3		
Timber								
Allowable Sale Quantity	MMCF	1.1	1.1	2.9	2.9	3.2	3.2	3.2
Allowable Sale Quantity	MMBF	5.0	5.3	17.0	14.3	14.8	15.4	12.1
Sawtimber (Softwood)	MMBF	4.7	4.5	16.6	12.0	9.7	12.6	11.0
Sawtimber (Hardwood)	MMBF	0	0.5	0	1.9	4.7	2.4	0.8
Roundwood Products	MMBF	0.3	0.3	0.4	0.4	0.4	0.4	0.3
Fuelwood	MMBF	1.6	1.6	5.5	5.2	3.7	3.5	3.0
Reforestation	ACRES	26	57	169	107	292	1954	118
TSI	ACRES	0	500	0	45	1062	0	1344
Water								
Meeting Water Quality Goals	%	98	98	98	100	100		
Increased Yield Over Natural-Forest-Wide	M AC.FT.	2.6	1.6	0.9	1.0	1.5		
Increased Yield Over Natural-Colorado River	M AC.FT.	0.5	0.3	0.3	0.6	0.8		
Protection								
Fuelbreaks and Fuel Treatment	ACRES	2183	1193	1456	5535	2401		

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE 1	2	3	4	5	10	15
Minerals								
Mineral Leases and Permits	CASES	595	660	600	575	565		
HC&D								
Human Resource Programs	EN.YEARS	20	20	20	20	20		
Lands								
Land Pur., Acq., & Exchange	CASES							
Soils								
Soil & Water Resource Imp.	ACRES	51	63	80	63	38		
Facilities								
Arterial and Collector Roads Construction/Reconstruction	MILES	0	0	0	0	0		
Local Roads								
Construction	MILES	5	2	2	2	2		
Reconstruction	MILES	1	1	1	1	1		
Trail Construction/Reconstruction	MILES							
BENEFITS M$								
Recreation								
Developed		1930	2694	4385	6836	8313		
Dispersed		7651	10016	11796	18542	20088		
Wilderness		90	119	190	297	402		
Total		9671	12829	16371	25675	28803		
Range		887	862	847	830	806		
Timber		369	316	963	982	626		
Wildlife		5644	6284	6203	6178	6203		
Water Yield		152	93	52	58	88		
Minerals		2903	3082	3001	2916	2825		
Other		21	21	21	21	21		
Total		19647	23487	27458	36660	39372		
RECEIPTS M$								
Recreation - Developed		184	247	395	698	737		
Range		111	108	106	104	101		
Timber		359	306	950	969	613		
Minerals		11	12	11	10	10		
Other		21	21	21	21	21		
Total		686	694	1483	1802	1482		
COSTS M$								
Timber		329	230	293	868	581		
Roads (Appropriated)		57	23	24	24	24		
Recreation		726	855	678	689	712		
Wildlife		193	224	233	254	271		
Range		240	234	229	224	228		
Protection		686	684	684	684	688		
Other		1871	2042	2139	2436	2631		
Total Forest Budget		4102	4292	4280	5179	5135		
O&M		3579	3737	3697	4215	4321		
Investment		523	555	583	964	814		
Non-Forest Service Costs (Purchaser Const. Roads)		34	18	42	94	65		
Returns to Treasury		686	694	1483	1802	1482		

TABLE II-3a
AVERAGE ANNUAL CASH FLOWS AND NON-CASH BENEFITS *
(Thousands of 1978 Dollars Inflated to 1/1/82)

BENCHMARK - MAXIMUM PNV ASSIGNED	DECADE 1	2	3	4	5
Timber					
Costs*	363	248	335	962	646
Benefits	369	316	963	982	626
Net Benefits	61	68	628	20	-20
Receipts	359	306	950	969	613
Net Receipts	-4	58	615	7	-33
Non-Cash Benefits	10	10	13	13	13
Recreation					
Costs	726	855	678	689	712
Benefits	9671	12829	16371	25675	28803
Net Benefits	8945	11974	15693	24986	28091
Receipts	184	247	395	698	737
Net Receipts	-542	-608	-283	9	25
Non-Cash Benefits	9487	12582	15976	24977	28066
Wildlife					
Costs	193	224	233	254	271
Benefits	5644	6284	6203	6178	6203
Net Benefits	5451	6060	5970	5924	5932
Receipts	0	0	0	0	0
Net Receipts	-193	-224	-233	-254	-271
Non-Cash Benefits	5644	6284	6203	6178	6203
Range					
Costs	240	234	229	224	228
Benefits	887	862	847	830	806
Net Benefits	647	628	618	606	578
Receipts	111	108	106	104	101
Net Receipts	-129	-126	-123	-120	-127
Non-Cash Benefits	776	754	741	726	705
Other					
Costs	2614	2749	2847	3144	3343
Benefits	3076	3196	3074	2995	2934
Net Benefits	462	447	227	-149	-409
Receipts	32	33	32	31	31
Net Receipts	-2582	-2716	-2815	-3113	-3312
Non-Cash Benefits	3044	3163	3042	2964	2903
Total					
Costs	4136	4310	4322	5273	5200
Benefits	19647	23487	27458	36660	39372
Net Benefits	15511	19177	23136	31387	34172
Receipts	686	694	1483	1802	1482
Net Receipts	-3450	-3616	0	-3471	-3718
Non-Cash Benefits	18961	22793	25975	34858	37890

* Includes Non-Forest Service Costs (Purchaser Constructed Roads)

TABLE II-4
RESOURCE OUTPUTS, ACTIVITIES, COSTS AND BENEFITS FOR BENCHMARK/MAXIMUM TIMBER

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE						
		1	2	3	4	5	10	15
Recreation								
Developed Recreation Use	MRVD	526	740	757	757	757		
Rural ROS		306	429	439	439	439		
Road Natural ROS		222	311	318	318	318		
Dispersed Recreation Use	MRVD	943	1177	1435	1750	3883		
Primitive ROS								
Semi-Primitive Non-Motor ROS		136	166	203	247	302		
Semi-Primitive Motorized ROS		290	357	435	530	646		
Road Natural ROS		435	535	652	795	970		
Rural ROS		82	119	144	177	216		
Dispersed Recreation Use (Wild.)	MRVD	43	43	43	43	43		
Primitive ROS		43	43	43	43	43		
Semi-Primitive Non-Motor ROS								
Wilderness								
Wilderness Management	MACRES	83	83	83	83	83		
Wildlife								
Structural Habitat Improvement-(Terrestrial)	STRUCTS	9	10	10	10	11		
Structural Habitat Improvement-Aquatic	STRUCTS	20	29	19	11	11		
Nonstructural Habitat Improvement-Terrestrial	ACRES	630	658	696	621	621		
Nonstructural Habitat Improvement-Aquatic	ACRES	210	220	232	207	207		
Wildlife and Fish Use	MWFUD	170	172	168	167	167		
Range								
Grazing Use (Livestock)	MAUM	117	117	117	117	117		
Wild Horses & Burros	MAUM	0.3	0.3	0.3	0.3	0.3		
Timber								
Allowable Sale Quantity	MMCF	6.1	6.2	6.2	6.2	6.3	6.3	6.3
Allowable Sale Quantity	MMBF	31.2	31.3	34.0	31.5	31.2	26.2	29.1
Sawtimber (Softwood)	MMBF	27.7	14.3	31.1	21.2	24.3	20.0	22.2
Sawtimber (Hardwood)	MMBF	2.7	16.0	1.8	9.1	5.6	5.2	5.7
Roundwood Products	MMBF	0.8	1.0	1.1	1.2	1.3	1.0	1.2
Fuelwood	MMBF	7.5	4.7	5.7	7.5	9.2	7.5	8.5
Reforestation	ACRES	1199	403	839	4154	2199	2682	808
TSI	ACRES	2629	610	1848	538	0	1735	228
Water								
Meeting Water Quality Goals	%	98	98	98	100	100		
Increased Yield Over Natural-Forest-Wide	M AC.FT.	3.5	7.9	7.5	7.3	8.3		
Increased Yield Over Natural-Colorado River	M AC.FT.	0.7	2.2	2.3	2.5	2.6		
Protection								
Fuelbreaks and Fuel Treatment	ACRES	9842	6109	6359	6489	5802		

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE 1	2	3	4	5	10	15
Minerals								
Mineral Leases and Permits	CASES	786	839	779	774	774		
HC&D								
Human Resource Programs	EN.YEARS	20	20	20	20	20		
Lands								
Land Pur., Acq., & Exchange	CASES	0	2	2	2	1		
Soils								
Soil & Water Resource Imp.	ACRES	46	58	58	58	33		
Facilities								
Arterial and Collector Roads								
Construction/Reconstruction	MILES	2	1	1	1	1		
Local Roads								
Construction	MILES	17	27	24	9	5		
Reconstruction	MILES	40	27	16	26	28		
Trail Construction/Rconstruction	MILES	7	7	7	7	7		
BENEFITS M$								
Recreation								
Developed		1865	2624	2684	2684	2684		
Dispersed		7305	8250	11114	11274	19802		
Wilderness		408	408	408	408	408		
Total		9578	11282	14206	14366	22894		
Range		943	943	943	943	943		
Timber		1582	906	1342	-36	723		
Wildlife		5631	5711	5623	5588	5604		
Water Yield		204	461	438	426	485		
Minerals		2914	3069	3026	2904	2813		
Other		21	21	21	21	21		
Total		20873	22393	25599	24212	33483		
RECEIPTS M$								
Recreation - Developed		202	279	286	286	286		
Range		118	118	118	118	118		
Timber		1569	893	1329	0	710		
Minerals		14	15	14	14	14		
Other		21	21	21	21	21		
Total		1924	1326	1768	439	1149		
COSTS M$								
Timber		1938	1549	1235	2496	1562		
Roads (Appropriated)		24	24	24	24	24		
Recreation		882	963	1368	2529	3539		
Wildlife		144	147	144	148	147		
Range		530	557	571	578	594		
Protection		690	684	679	684	682		
Other		2441	2557	2584	2982	3079		
Total Forest Budget		6649	6481	6605	9441	9627		
O&M		4852	4954	4930	6052	6099		
Investment		1797	1527	1675	3389	3528		
Non-Forest Service Costs (Purchaser Const. Roads)		168	212	150	127	67		
Returns to Treasury		1924	1326	1768	390	1149		

TABLE II-4a
AVERAGE ANNUAL CASH FLOWS AND NON-CASH BENEFITS *
(Thousands of 1978 Dollars Inflated to 1/1/82)

	DECADE				
BENCHMARK - MAXIMUM TIMBER	1	2	3	4	5
Timber					
Costs*	2106	1761	1385	2623	1629
Benefits	1582	906	1342	-36	723
Net Benefits	-524	-855	-43	-2659	-906
Receipts	1569	893	1329	0	710
Net Receipts	-537	-868	-56	-2623	-919
Non-Cash Benefits	13	13	13	0	13
Recreation					
Costs	882	963	1368	2529	3539
Benefits	9578	11282	14206	14366	22894
Net Benefits	8696	10319	12838	11837	19355
Receipts	202	279	286	286	286
Net Receipts	-680	-684	-1082	-2243	-3253
Non-Cash Benefits	9376	11003	13920	14080	22608
Wildlife					
Costs	144	147	144	148	147
Benefits	5631	5711	5623	5588	5604
Net Benefits	5487	5564	5479	5440	5457
Receipts	0	0	0	0	0
Net Receipts	-144	-147	-144	-148	-147
Non-Cash Benefits	5631	5711	5623	5588	5604
Range					
Costs	530	557	571	578	594
Benefits	943	943	943	943	943
Net Benefits	413	386	372	365	349
Receipts	118	118	118	118	118
Net Receipts	-412	-439	-453	-460	-476
Non-Cash Benefits	825	825	825	825	825
Other					
Costs	3155	2649	3287	3690	3785
Benefits	3139	3551	3485	3351	3319
Net Benefits	-16	902	198	-339	-466
Receipts	36	36	35	35	35
Net Receipts	-3120	-2613	-3252	-3655	-3750
Non-Cash Benefits	3104	3515	3450	3316	3284
Total					
Costs	6817	6077	6755	9568	9694
Benefits	20873	22393	25599	24212	33483
Net Benefits	14056	16316	18844	14644	23789
Receipts	1924	1326	1768	439	1149
Net Receipts	-4893	-4751	-4987	-9129	-8545
Non-Cash Benefits	18949	21067	23831	23773	32334

* Includes Non-Forest Service Costs (Purchaser Constructed Roads)

TABLE II-5
RESOURCE OUTPUTS, ACTIVITIES, COSTS AND BENEFITS FOR BENCHMARK/MAXIMUM RANGE

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE 1	2	3	4	5	10	15
Recreation								
Developed Recreation Use	MRVD	526	653	538	538	538		
Rural ROS		306	429	312	312	312		
Road Natural ROS		222	224	226	226	226		
Dispersed Recreation Use	MRVD	827	1106	1705	2618	4033		
Primitive ROS								
Semi-Primitive Non-Motor ROS		41	55	85	131	202		
Semi-Primitive Motorized ROS		83	111	170	262	403		
Road Natural ROS		579	774	1193	1832	2823		
Rural ROS		124	166	255	393	605		
Dispersed Recreation Use (Wild.)	MRVD	4	4	4	4	4		
Primitive ROS		4	4	4	4	4		
Semi-Primitive Non-Motor ROS								
Wilderness								
Wilderness Management	MACRES	83	83	83	83	83		
Wildlife								
Structural Habitat Improvement-(Terrestrial)	STRUCTS	14	12	9	8	6		
Structural Habitat Improvement-Aquatic	STRUCTS	7	7	7	7	7		
Nonstructural Habitat Improvement-Terrestrial	ACRES	400	400	400	400	400		
Nonstructural Habitat Improvement-Aquatic	ACRES	75	71	64	64	58		
Wildlife and Fish Use	MWFUD	165	112	84	67	58		
Range								
Grazing Use (Livestock)	MAUM	119	124	130	137	143		
Wild Horses & Burros	MAUM	0.3	0.3	0.3	0.3	0.3		
Timber								
Allowable Sale Quantity	MMCF	4.0	3.2	3.4	5.6	2.7	3.1	4.3
Allowable Sale Quantity	MMBF	20.0	16.5	17.1	23.7	14.5	13.7	22.1
Sawtimber (Softwood)	MMBF	12.2	10.3	10.5	16.9	13.0	12.8	18.4
Sawtimber (Hardwood)	MMBF	7.0	5.8	5.8	6.0	0.7	0.1	2.7
Roundwood Products	MMBF	0.8	0.4	0.8	0.8	0.8	0.8	1.0
Fuelwood	MMBF	10.1	7.2	6.8	7.7	8.7	7.5	8.5
Reforestation	ACRES	153	159	143	306	614	2831	904
TSI	ACRES	1536	74	294	1107	450	0	2520
Water								
Meeting Water Quality Goals	%	98	98	98	100	100		
Increased Yield Over Natural-Forest-Wide	M AC.FT.	4.1	4.1	3.3	3.2	3.0		
Increased Yield Over Natural-Colorado River	M AC.FT.	1.1	1.4	1.2	1.4	1.3		
Protection								
Fuelbreaks and Fuel Treatment	ACRES	7957	7717	6954	4471	5342		

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE						
		1	2	3	4	5	10	15
Minerals								
Mineral Leases and Permits	CASES	786	839	779	774	744		
HC&D								
Human Resource Programs	EN.YEARS	20	20	20	20	20		
Lands								
Land Pur., Acq., & Exchange	CASES							
Soils								
Soil & Water Resource Imp.	ACRES	46	58	58	58	33		
Facilities								
Arterial and Collector Roads Construction/Reconstruction	MILES	2	1	1	1	1		
Local Roads								
Construction	MILES	17	27	24	9	5		
Reconstruction	MILES	40	27	16	26	28		
Trail Construction/Roonstruction	MILES	7	7	7	7	7		
BENEFITS M$								
Recreation								
Developed		2176	2702	2227	2227	2227		
Dispersed		9033	9629	12515	17911	18215		
Wilderness		48	48	48	48	48		
Total		11257	12379	14790	20186	20490		
Range		959	998	1047	1104	1153		
Timber		907	708	756	1066	831		
Wildlife		4707	3115	2230	1695	1387		
Water Yield		239	239	193	187	175		
Minerals		2914	3069	3026	2904	2813		
Other		21	21	21	21	21		
Total		21004	20529	22063	27163	26870		
RECEIPTS M$								
Recreation - Developed		202	248	207	207	207		
Range		120	125	131	138	144		
Timber		894	695	743	1053	818		
Minerals		14	15	14	14	13		
Other		21	21	21	21	21		
Total		2151	1104	1116	1433	1203		
COSTS M$								
Timber		952	648	631	903	833		
Roads (Appropriated)		48	29	0	24	24		
Recreation		449	449	563	587	691		
Wildlife		70	70	68	68	72		
Range		693	756	775	575	596		
Protection		670	670	670	670	670		
Other		1121	1279	1231	1477	1478		
Total Forest Budget		4003	3901	3938	4304	4364		
O&M		2817	2926	2983	3267	3299		
Investment		1186	975	955	1037	1065		
Non-Forest Service Costs (Purchaser Const. Roads)		118	88	82	117	77		
Returns to Treasury		1251	1104	1116	1433	1203		

TABLE II-5a
AVERAGE ANNUAL CASH FLOWS AND NON-CASH BENEFITS *
(Thousands of 1978 Dollars Inflated to 1/1/82)

BENCHMARK - MAXIMUM RANGE	DECADE				
	1	2	3	4	5
Timber					
Costs*	1070	736	713	1020	910
Benefits	907	708	756	1066	831
Net Benefits	-163	-28	43	46	-79
Receipts	894	695	743	1053	818
Net Receipts	-176	-41	30	33	-92
Non-Cash Benefits	13	13	13	13	13
Recreation					
Costs	449	449	563	587	691
Benefits	11257	12379	14227	19599	20490
Net Benefits	10808	11930	14227	19599	19799
Receipts	202	248	207	207	207
Net Receipts	-247	-201	-356	-380	-484
Non-Cash Benefits	11055	12131	14583	19979	20283
Wildlife					
Costs	70	70	68	68	72
Benefits	4707	3115	2230	1695	1387
Net Benefits	4637	3045	2162	1627	1315
Receipts	0	0	0	0	0
Net Receipts	-70	-70	-68	-68	-72
Non-Cash Benefits	4707	3115	2230	1695	1387
Range					
Costs	693	756	775	575	596
Benefits	959	998	1047	1104	1153
Net Benefits	266	242	272	529	557
Receipts	120	125	131	138	144
Net Receipts	-573	-631	-644	-437	-452
Non-Cash Benefits	589	442	484	746	539
Other					
Costs	1839	1978	1901	2171	2172
Benefits	3174	3329	3240	3112	3009
Net Benefits	1335	1351	1339	941	837
Receipts	35	36	35	35	34
Net Receipts	-1804	-1942	-1866	-2136	-2138
Non-Cash Benefits	3139	3293	3205	3077	2975
Total					
Costs	4121	3989	4020	4421	4441
Benefits	21004	20529	22063	27163	26870
Net Benefits	16833	16540	18043	22742	22429
Receipts	1251	1104	1116	1433	1203
Net Receipts	-2870	-2885	-2904	-2988	-3238
Non-Cash Benefits	19503	18994	20515	25510	25197

* Includes Non-Forest Service Costs (Purchaser Constructed Roads)

TABLE II-5(5)
RESOURCE OUTPUTS, ACTIVITIES, COSTS AND BENEFITS FOR BENCHMARK/CURRENT PROGRAM

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE						
		1	2	3	4	5	10	15
Recreation								
Developed Recreation Use	MRVD	466	641	958	1275	1106		
Rural ROS		186	256	383	510	804		
Road Natural ROS		280	385	575	765	302		
Dispersed Recreation Use	MRVD	780	1056	1693	2641	3391		
Primitive ROS								
Semi-Primitive Non-Motor ROS	MRVD	110	149	239	373	508		
Semi-Primitive Motorized ROS	MRVD	236	320	513	800	1088		
Road Natural ROS		355	480	769	1201	1634		
Rural ROS		79	107	171	267	363		
Dispersed Recreation Use (Wild.)	MRVD	8	11	17	27	36		
Primitive ROS		8	11	17	27	36		
Semi-Primitive Non-Motor ROS								
Wilderness								
Wilderness Management	MACRES	83	83	83	83	83		
Wildlife								
Structural Habitat Improvement-(Terrestrial)	STRUCTS	10	12	12	12	12		
Structural Habitat Improvement-Aquatic	STRUCTS	20	25	25	25	25		
Nonstructural Habitat Improvement-Terrestrial	ACRES	850	840	840	820	820		
Nonstructural Habitat Improvement-Aquatic	ACRES	100	110	110	130	130		
Wildlife and Fish Use	MWFUD	171	183	182	180	179		
Range								
Grazing Use (Livestock)	MAUM	115	115	115	115	115		
Wild Horses & Burros	MAUM	0.3	0.3	0.3	0.3	0.3		
Timber								
Allowable Sale Quantity	MMCF	5.1	5.2	5.3	5.3	5.4	5.4	5.4
Allowable Sale Quantity	MMBF	26.4	26.0	26.3	26.4	26.4	22.5	24.4
Sawtimber (Softwood)	MMBF	22.9	15.7	14.9	17.4	21.3	19.5	20.5
Sawtimber (Hardwood)	MMBF	2.8	9.4	10.3	7.8	3.7	1.9	2.7
Roundwood Products	MMBF	0.7	0.9	1.1	1.2	1.4	1.1	1.2
Fuelwood	MMBF	10.7	8.4	8.5	8.0	9.4	8.0	8.1
Reforestation	ACRES	1588	402	454	3353	1646	1382	921
TSI	ACRES	5000	54	1769	628	250	119	0
Water								
Meeting Water Quality Goals	%	98	98	98	100	100		
Increased Yield Over Natural-Forest-Wide	M AC.FT.	4.3	8.3	8.1	6.7	6.0		
Increased Yield Over Natural-Colorado River	M AC.FT.	1.2	2.7	2.6	2.1	1.9		
Protection								
Fuelbreaks and Fuel Treatment	ACRES	10505	7117	4641	5133	4919		

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE 1	2	3	4	5	10	15
Mineral Leases and Permits	CASES	690	730	750	750	780		
HC&D								
Human Resource Programs	EN.YEARS	20	20	20	20	20		
Lands								
Land Pur., Acq., & Exchange	CASES	2	2	2	2	2		
Soils								
Soil & Water Resource Imp.	ACRES	51	63	80	63	38		
Facilities								
Arterial and Collector Roads Construction/Reconstruction	MILES	2	1	1	1	1		
Local Roads								
Construction	MILES	28	18	15	11	7		
Reconstruction	MILES	32	34	21	22	22		
Trail Construction/Rconstruction	MILES	0	0	0	0	0		
BENEFITS M$								
Recreation								
Developed		1929	2654	3966	5279	8754		
Dispersed		6917	8287	10865	14769	18709		
Wilderness		90	121	191	297	403		
Total		8936	11062	15022	20345	27866		
Range		927	927	927	927	927		
Timber		1211	1257	964	512	740		
Wildlife		5551	5649	5680	5710	5741		
Water Yield		251	485	473	391	350		
Minerals		2884	3081	3038	2899	2828		
Other		21	21	21	21	21		
Total		19781	22482	26125	30805	38473		
RECEIPTS M$								
Recreation - Developed		181	244	358	472	411		
Range		116	116	116	116	116		
Timber		1198	124	951	499	727		
Minerals		12	13	14	14	14		
Other		21	21	21	21	21		
Total		1528	1638	1460	1122	1289		
COSTS M$								
Timber		2500	1327	1071	1981	1314		
Roads (Appropriated)		48	24	24	24	24		
Recreation		640	743	733	832	653		
Wildlife		119	131	139	136	141		
Range		380	380	386	382	389		
Protection		226	335	335	335	335		
Other		2310	2309	2326	2346	2331		
Total Forest Budget		6223	5249	5014	6036	5187		
O&M		3892	3971	3902	4037	3831		
Investment		2331	1278	1112	1999	1356		
Non-Forest Service Costs (Purchaser Const. Roads)		239	170	118	100	64		
Returns to Treasury		1528	1638	1460	1122	1289		

TABLE II-5(5)a
AVERAGE ANNUAL CASH FLOWS AND NON-CASH BENEFITS *
(Thousands of 1978 Dollars Inflated to 1/1/82)

	DECADE				
BENCHMARK - CURRENT PROGRAM	1	2	3	4	5
Timber					
Costs*	2739	1497	1189	2081	1378
Benefits	1211	1257	964	512	740
Net Benefits	-1528	-240	-225	-1569	-638
Receipts	1198	1244	951	499	727
Net Receipts	-1541	-253	-238	-1582	-651
Non-Cash Benefits	13	13	13	13	13
Recreation					
Costs	640	743	733	832	653
Benefits	8936	11062	15022	20345	27866
Net Benefits	8296	10319	14289	19513	27213
Receipts	181	244	358	472	411
Net Receipts	-459	-499	-375	-360	-242
Non-Cash Benefits	8755	10818	14664	19873	27455
Wildlife					
Costs	119	131	139	136	141
Benefits	5551	5649	5680	5710	5741
Net Benefits	5432	5518	5541	5574	5600
Receipts	0	0	0	0	0
Net Receipts	-119	-131	-139	-136	-141
Non-Cash Benefits	5551	5649	5680	5710	5741
Range					
Costs	380	380	386	382	389
Benefits	927	927	927	927	927
Net Benefits	547	547	541	545	538
Receipts	116	116	116	116	116
Net Receipts	-264	-264	-270	-266	-273
Non-Cash Benefits	811	811	811	811	811
Other					
Costs	2584	2668	2685	2705	2690
Benefits	3156	3587	3532	3311	3199
Net Benefits	572	919	847	606	5094
Receipts	33	34	35	35	35
Net Receipts	-2551	-2634	-2650	-2670	-2655
Non-Cash Benefits	3123	3553	3497	3276	3164
Total					
Costs	6462	5419	5132	6136	5251
Benefits	19781	22482	26125	30805	38473
Net Benefits	13319	17063	20993	24669	33222
Receipts	1528	1638	1460	1122	1289
Net Receipts	-4934	-3781	-3671	-5014	-3962
Non-Cash Benefits	18253	20844	24665	29683	37184

* Includes Non-Forest Service Costs (Purchaser Constructed Roads)

TABLE II-6
PRESENT NET VALUE AND NON-PRICED OUTPUTS
(MM 1978 Dollars Inflated to 1/1/82)
(Discount Rate 4%)

Benchmarks	PNV	PVC	PVB	VQO Retention M Acres	VQO Partial Retention M Acres	Wildlife Emphasis Management M Acres	Declining Watershed Condition M Acres	Percent of Forest With Moderate or Low Restrictions For Mineral Activities	No. Of Deer In 2030 M Numbers	No. Of Elk In 2030 Numbers
Min Level										
Decade 1	84.9	5.8	90.7	108	577	0	110	92		
2	59.8	4.2	64.0	108	577	0	85	92		
3	41.0	2.9	43.9	108	577	0	70	92		
4	26.6	2.0	28.6	108	577	0	50	92		
5	18.1	1.3	19.4	108	577	0	30	92	28.2	2000
Max Range										
Decade 1	138.8	33.8	172.6	841	617	41	113	92		
2	91.9	22.1	114.0	829	514	41	113	92		
3	67.7	15.1	82.8	812	442	41	112	92		
4	57.6	11.2	68.8	800	370	41	112	92		
5	38.4	7.6	46.0	583	298	41	112	92	6.7	450
Max Timber										
Decade 1	115.5	56.0	171.5	825	617	41	113	92		
2	87.1	37.2	124.3	822	590	41	113	92		
3	70.7	25.3	96.0	819	549	41	112	92		
4	37.2	24.2	61.4	816	523	41	112	92		
5	40.7	16.6	57.3	813	482	41	112	92	25.5	500
Max PNV (Mkt)										
Decade 1	116.5	24.9	141.4	850	642	131	103	94		
2	83.5	16.6	100.1	849	633	131	29	94		
3	75.5	12.0	87.5	847	625	131	56	94		
4	59.4	13.1	72.5	844	617	131	31	94		
5	48.6	9.8	58.4	842	609	131	11	94	53.5	1800
Max PNV (Asgn)										
Decade 1	127.4	34.0	161.4	850	642	131	103	94		
2	106.5	23.9	130.4	849	626	131	28	94		
3	86.8	16.2	103.0	847	614	131	56	94		
4	79.5	13.1	92.9	844	602	131	31	94		
5	58.5	8.9	67.4	840	588	131	11	94	53.5	1800
Cur Prog										
Decade 1	109.4	53.1	162.5	850	629	131	102	93		
2	94.7	30.1	124.8	848	617	131	79	93		
3	78.7	19.3	98.0	844	603	131	56	93		
4	62.6	15.5	78.1	841	591	131	31	93		
5	56.9	9.0	65.9	838	578	131	11	93	53.5	1800

TABLE II-7
PRESENT NET VALUE AND PRICED OUTPUTS
(Thousands of 1978 Dollars Inflated to 1/1/82)*

BENCH-MARKS	PNV	PV COSTS**	PV BENEFITS	PV BENEFITS BY RESOURCE							PVC COSTS BY MAJOR COST CATEGORIES					
				REC.	RGE.	TBR.	WL.	WTR.	MIN.	OTHER	TBR***	REC.	WL.	RGE.	PROTEC.	OTHER
Minimum Level	230300	16320	246620	114170	0	0	92970	0	39020	460	0	3370	0	0	4140	8810
Maximum Range	394350	89850	484200	302950	14700	25790	71010	4780	64510	460	19700	10960	1510	15280	14580	27820
Maximum Timber	351180	159380	510560	270240	20530	24210	122820	7790	64510	460	41720	30190	3170	12070	14920	57310
Max PNV Market	383550	76360	459910	294500	18740	11950	92970	2270	39020	460	9160	30300	1770	5090	12080	17960
Max PNV Assigned	458810	96370	555180	326490	18740	11950	130820	2270	64450	460	9160	16220	4810	5090	14910	46180
Current Program	402340	127000	529340	290470	20190	23120	122590	8110	64400	460	42910	15360	2810	8310	6430	51180

* Direct comparisons of benefits and costs displayed for individual resource outputs provide general indications of relationships but may be misleading because some outputs in multiple use forestry have common costs of production that cannot be easily separated and attributed to individual resources.

** 4% Discount Rate used.

*** Includes non-Forest Service Costs (Purchaser Road Construction).

NOTE: Support costs to these program components (Tbr, Rec, Wl, Rge, Other, etc.) from other program components are included.

TABLE II-7a
PRESENT NET VALUE AND PRICED OUTPUTS
(Thousands of 1978 Dollars Inflated to 1/1/82)*

BENCH-MARKS	(RECEIPTS) PNV	PV COSTS**	PV RECEIPTS	PV RECEIPTS BY RESOURCE							PVC COSTS BY MAJOR COST CATEGORIES					
				REC.	RGE.	TBR.	WL.	WTR.	MIN.	OTHER	TBR***	REC.	WL.	RGE.	PROTEC.	OTHER
Minimum Level	-15470	16320	850	280	0	0	0	0	110	460	0	3370	0	0	4140	8810
Maximum Range	-56110	89850	33740	4690	2770	25510	0	0	310	460	19700	10960	1510	15280	14580	27820
Maximum Timber	-126500	159380	32880	5490	2570	24050	0	0	310	460	41720	30190	3170	12070	14920	57310
Max PNV Market	-53810	76360	22550	7920	2340	11720	0	0	110	460	9160	30300	1770	5090	12080	17960
Max PNV Asgn.	-74210	96370	22160	7390	2340	11720	0	0	250	460	9160	16220	4810	5090	14910	46180
Current Program	-94840	127000	32160	6080	2520	22820	0	0	280	460	42910	15360	2810	8310	6430	51180

* Direct comparisons of receipts and costs displayed for individual resource outputs provide general indications of relationships but may be misleading because some outputs in multiple use forestry have common costs of production that cannot be easily separated and attributed to individual resources.

** 4% Discount Rate used.

*** Includes non-Forest Service Costs (Purchaser Road Construction).

NOTE: Support costs to these program components (Tbr, Rec, Wl, Rge, Other, etc.) from other program components are included.

TABLE II-8
PRESENT NET VALUE AND QUALITATIVE EFFECTS
(MM 1978 Dollars Inflated to 1/1/82)

	PNV	PVC	PVB	Narrative
Benchmarks				
Minimum Level	230.3	16.3	246.6	Emphasizes custodial management of the forest only naturally occurring and non-induced outputs and costs are analyzed.
Maximum Range	394.4	89.8	484.2	Emphasizes range grazing. Timber harvest levels are high due to efforts to create transitory range in timbered areas.
Maximum Timber	351.2	159.4	510.6	Emphasizes timber outputs including both soft wood and hardwood. Range outputs increase due to transitory range incrase in timbered areas.
Maximum PNV (Mkt)	383.5	76.4	459.9	Emphasizes the level of outputs for Timber, Range, and Developed Recreation that provide the greatest PNV. Other resource outputs are not emphasized.
Maximum PNV (Assigned)	458.8	96.4	555.2	Emphasizes the level of outputs that would provide the greatest PNV. Timber and Range output levels are low while Developed Recreation has high outputs.
Current Program	402.3	127.0	529.3	Emphasizes continuation of current output levels and costs with projected increases in recreation and minerals due to demands.

information. The act did, however, designate three wilderness areas totaling 83,000 acres. This designation remains constant in all benchmarks and all alternatives.

Market Emphasis with Timber Departure. This alternative was designed to display the effects of achieving a high level of timber outputs by accelerating the harvest of timber (departing from a base sale schedule that would not decline and by harvesting timber from steep slopes with special logging equipment. However, the analysis of this timber data revealed that an acceleration would not produce a significantly higher level, and that logging steep slopes with special equipment could be included with Alternative F-Market emphasis and provide the same results. The alternative was eliminated from further study.

E. ALTERNATIVES CONSIDERED IN DETAIL

Eight alternatives are considered in detail in this section. These alternatives are: A - Current Program, B - Composite, C - Constrained Budget, D - Current Budget, E - Non Market Emphasis, F - Market Emphasis, G - RPA 80, H - High Productivity. The Composite alternative is the proposed action. Each alternative meets NFMA feasibility requirements. They are economically, technically, budgetarily, and environmentally feasible and reasonable.

The NFMA regulations require alternatives to address public issues and management concerns. Each alternative addresses the set of planning questions differently.

The alternatives reflect a broad range of resource outputs and expenditure levels. They address differently the public issues, management concerns, and resource opportunities through a unique combination of management prescriptions. Each prescription contains unique standards and guidelines for resource uses and activities. See Chapter IV of the proposed Forest Plan for a complete display of the prescriptions.

Both FORPLAN and a discount analysis were used to help select the combination of prescriptions in each alternative to maximize present net value, given the alternative goals and constraints. A detailed discussion of the linear program model FORPLAN and the economic analysis, is presented in Appendix B. Using both FORPLAN and Economic analysis meets NFMA requirements that each alternative represent to the extent practicable the most cost-efficient combination of management activities. The combination of prescriptions selected was the most cost-efficient combination available in every alternative, because the objective was to maximize present net value.

Although the alternatives considered in detail have different outputs, costs, and effects, each alternative represents the most cost-efficient way of meeting the goals of that alternative. Each alternative has also been evaluated for spatial and resource output feasibility.

The models used and the use of interdisciplinary teams also fulfilled NFMA requirements for the coordination of outdoor recreation, range, timber, water, wildlife and fish, and wilderness. To achieve multiple-use coordination, each alternative must provide an integrated mix of resource outputs.

In addition to the following descriptions, maps are included in Draft EIS package. The maps display the spatial distribution of management prescriptions that were selected for each alternative. The alternative maps display corridors for the proposed construction and reconstruction of arterial and collector roads, corridors for major existing utility routes, and windows for major utility proposals.

The following section describes the goals, objectives, and expected future condition of each alternative.

Tables II-9 through II-16a, II-19, II-23 and II-23a which follow display comparisons of benefits and costs for individual resources. Direct comparisons of benefits and costs displayed for individual resource outputs provide general indications of relationships but may be misleading because some outputs in multiple use management have common costs of production that cannot be easily separated and attributed to individual resources.

1. Alternative A - Current Program (No Action)

This alternative describes the current level and trend of goods and services to be provided in the future. The budget is constrained in the first decade, but increases in subsequent decades to meet projected trends. This alternative provides a "baseline" for comparison with other alternatives and helps determine the need for change.

The goals of this alternative are:

- Continue the existing developed recreation site capacity and adherence to standards to prevent site deterioration.
- Accommodate an anticipated increase in dispersed recreation visits.
- Manage the Pine Valley Mountains, Ashdown Gorge, and the Box-Death Hollow Wilderness's.
- Increase the number of research natural areas.
- Manage wildlife habitat to support minimum viable populations of all native and desired non-native vertebrate species and improve the habitat where needed for selected species.
- Maintain current levels of permitted livestock grazing.
- Maintain investments in structural and non-structural range improvements.
- Maintain timber sale offerings as described in the current timber management plan.
- Improve acres of declining watershed condition by treating the backlog of soil and water restoration needs and improving poor condition range lands.
- Maintain restrictions for mineral leasing activities. Provide prompt responses to mineral requests.
- Provide cost efficient fire suppression.

The objectives that will be needed to meet the above listed goals and expected future conditions of the Forest are described below by major resource areas:

a. Recreation

About 20 percent of the developed site capacity would be managed at full service levels. The remainder would be at reduced service levels. No new developed sites would be built. The Forest would rehabilitate and "harden" (artificial surfacing) about 50 developed recreation site units per decade. After the year 2010 about 10 percent of all units would be periodically closed, rested, and then re-opened.

Forty to fifty percent of the maintenance in developed sites would be done by human resource programs. Without these programs, the existing facilities would be lost before the end of the planning period.

Although the demand on some of the more popular developed recreation sites presently exceeds their capacity, the capacity Forest-wide will not be exceeded until about the year 2000. After this period, continual increasing demand will create a situation that has people camping off-Forest or camping on-Forest in undeveloped areas.

Trail and road maintenance for recreation purposes would continue on only the more heavily used trails and roads.

The capacity of the Forest for dispersed recreation use would not be exceeded Forest-wide during the planning period, but popular sites would be progressively overused to the point that the quality of the experience would be diminished. Acreage by ROS class would shift less than five percent from the non-motorized to the motorized classes.

Human Resource Programs and volunteers would be used to monitor use and collect refuse in high use areas. Without such programs most of the litter would accumulate.

Scenic values along major roads and recreation areas would be protected.

Most cultural resource survey efforts would be conducted in the proposed Mountain Pine Beetle timber sale areas although some work would be required in designated aspen cutting areas for wildlife habitat improvement. After 1990, survey work would continue at the present level in mixed conifer and spruce sales. Increased impacts to the cultural resource base can be expected under this alternative which emphasizes dispersed recreation.

Research natural areas would be established on the Timbered Cinder Cone (640 acres), Table Cliff (1,235 acres), and Red Canyon (460 acres) in order to protect their unique characteristics and scientific values.

b. Wilderness

Management of the Box-Death Hollow and Ashdown Gorge wilderness areas would emphasize semi-primitive wilderness settings. The management of the Pine Valley Mountain Wilderness would also emphasize semi-primitive wilderness settings; however, the heavy use areas would require more intensive land management, only the more heavily used trails (i.e. the Whipple National Recreation Trail would be maintained or improved. Trails in Ashdown Gorge, and Box-Death Hollow would receive little or no maintenance unless done by others such as volunteers and other Human Resource Programs.

c. Fish and Wildlife

Habitat management would stress mitigation of land use activities to maintain viable populations. An average of 950 acres and 35 structures of habitat improvement projects would be initiated annually during the planning period. Prescribed burning for vegetative manipulation and aspen cutting would remain at low levels. Protection of big game winter range from livestock use would not receive heavy emphasis.

Habitat capability would gradually improve (approximately 10 percent) for many species because of the general improvement in range condition. Deer numbers would probably decline somewhat on some herd units because of off-Forest development on essential range. Elk would continue to expand their range and population. Snag dependent wildlife species would steadily decline on some areas (primarily the Cedar City R.D.) because of increased access and unauthorized snag cutting. Habitat diversity would improve somewhat as emphasis in timber harvest is shifted to spruce-fir and mixed conifer and some habitat improvement is directed at the browse and aspen types. Fish habitat capability would increase slightly in streams and lakes, however, because of the gradual eutrophication of Panguitch Lake, due to causes beyond Forest Service control, overall capability would decline until the problems are solved.

The necessary coordination would be provided to improve the habitat to assist in the removal of the Utah Prairie dog from threatened and endangered status. This includes providing the Forest's share of transplant sites (11) and cooperating in meeting the objectives of the Utah Prairie Dog Recovery Plan.

d. Range

This alternative would continue livestock grazing practices that would maintain the suitable range in good range condition and allow 110,000 acres of poor condition range to improve to at least fair condition. Projected budget levels have been increased to provide essential maintenance of range improvement--particularly the extensive crested wheat reseedings.

e. Timber

This alternative would complete timber sales for mountain pine beetle management by 1990, then continue offering a program of about 26 MMBF with a high percentage of that volume coming from the mixed conifer and spruce-fir types until about 1995 or 2000. Conifer volumes would then decline until second growth becomes large enough to harvest near the end of the planning period. After 2030, conifer harvest volumes would equal or exceed 20 MMBF annually.

By the end of the year 2000 most of the available and tentatively suitable timberland, except on steep slopes or remote areas, would have been cutover. A balance of timber age classes would not be achieved until about 2200. Some areas (leave strips, steep slopes, and remote areas) would remain susceptible to insect and disease infestations until 2030. The harvest of aspen would increase over current levels if a market demand materializes. An average of 5,000 acres of TSI and 1,588 acres of reforestation would be done each year for the first decade.

f. Soil and Water

Watershed restoration will progress at moderate rates. About 725 acres of large size projects will be completed by 2000. About 1515 acres of smaller projects will be completed by 2020.

Watershed condition would improve significantly by the end of the planning period. Use on riparian areas would remain moderate. Existing management-related water quality problems would be mitigated before the end of the planning period. No significant deterioration of water quality would occur. No significant change in water yield would occur.

g. Minerals

The production of oil and gas from Forest lands is expected to remain about constant through the planning period. Coal production would begin on a modest scale about the second decade and gradually increase until the end of the planning period. Request for leasing, permits, etc., would receive prompt responses.

h. Lands

The land adjustment activities (exchange and purchase) following the Land Adjustment Program would face some delay in acting on proposals and would involve one to two cases per year. Cases in the first decade would generally be generated by out-of-service requests which would after the first decade, change to a more aggressive program of contacting potential proponents. Any increase in program after the first decade would require an increase in funding. Increased attention after the first decade would be directed toward cases that would protect and assist the increased needs and demands for dispersed recreation. In view of the increasing dispersed use, selected lands for exchange would receive priority based on the highest value per acre so that he smallest acreage reduction occurs in relation to acreage gained.

The rights-of-way activities following the Rights-of-Way Program would face some delay in response to need and need would result from current resource projects during first decade. Level of activity during first decade would be two to five cases per year. Some roadways (prescriptive) and access to public lands would be blocked by private landowners during the first decade. After the first decade, with increased funds, there would be an increasing program with priority directed not only toward resource needs, but to the increasing recreation needs and demands for dispersed use. The program would after the first decade, be more responsive to the needs and status of system roads with a priority to provide adequate access to all areas larger than 10,000 acres. Research Natural areas would be established at the Timbered Cinder Cone (640 acres). Table Cliff (1,235 Acres) and Red Canyon (460 Acres). Establishment reports have been completed for Timbered Cinder Cone and Table Cliff. Enough field data have been acquired to write an establishment report for Red Canyon. Additional Research Natural Areas maybe established if suitable areas exist and are needed.

TABLE II-9
RESOURCE OUTPUTS, ACTIVITIES, COSTS AND BENEFITS FOR ALTERNATIVE A CURRENT PROGRAM*

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE						
		1	2	3	4	5	10	15
Recreation								
Developed Recreation Use	MRVD	466	641	958	1275	1106		
Rural ROS		186	256	383	510	804		
Road Natural ROS		280	385	575	765	302		
Dispersed Recreation Use	MRVD	780	1056	1693	2641	3391		
Primitive ROS								
Semi-Primitive Non-Motor ROS		110	149	239	373	508		
Semi-Primitive Motorized ROS		236	320	513	800	1088		
Road Natural ROS		355	480	769	1201	1634		
Rural ROS		79	107	171	267	363		
Dispersed Recreation Use (Wild.)	MRVD	8	11	17	27	36		
Primitive ROS		8	11	17	27	36		
Semi-Primitive Non-Motor ROS								
Wilderness								
Wilderness Management	MACRES	83	83	83	83	83		
Wildlife								
Structural Habitat Improvement-(Terrestrial)	STRUCTS	10	12	12	12	12		
Structural Habitat Improvement-Aquatic	STRUCTS	20	25	25	25	25		
Nonstructural Habitat Improvement-Terrestrial	ACRES	850	840	840	820	820		
Nonstructural Habitat Improvement-Aquatic	ACRES	100	110	110	130	130		
Wildlife and Fish Use	MWFUD	171	183	182	180	179		
Range								
Grazing Use (Livestock)	MAUM	115	115	115	115	115		
Wild Horses & Burros	MAUM	0.3	0.3	0.3	0.3	0.3		
Timber								
Allowable Sale Quantity	MMCF	5.1	5.2	5.3	5.3	5.4	5.4	5.4
Allowable Sale Quantity	MMBF	26.4	26.0	26.3	26.4	26.4	22.5	24.4
Sawtimber (Softwood)	MMBF	22.9	15.7	14.9	17.4	21.3	19.5	20.5
Sawtimber (Hardwood)**	MMBF	2.8	9.4	10.3	7.8	3.7	1.9	2.7
Roundwood Products	MMBF	0.7	0.9	1.1	1.2	1.4	1.1	1.2
Fuelwood	MMBF	10.7	8.4	8.5	8.0	9.4	8.0	8.1
Reforestation	ACRES	1588	402	454	3353	1646	1382	921
TSI	ACRES	5000	54	1769	628	250	119	0
Water								
Meeting Water Quality Goals	%	98	98	98	100	100		
Increased Yield Over Natural-Forest-Wide	M AC.FT.	4.3	8.3	8.1	6.7	6.0		
Increased Yield Over Natural-Colorado River	M AC.FT.	1.2	2.7	2.6	2.1	1.9		
Protection								
Fuelbreaks and Fuel Treatment	ACRES	10505	7117	4641	5133	4919		

* Entries in the following tables are on an average annual basis for the decade.

** Aspen could have been displayed as roundwood rather than sawtimber in the following tables. Higher sawtimber merchantability standards were applied to aspen providing conservative volume estimates as were conservative fuelwood benefit values.

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE						
		1	2	3	4	5	10	15
Minerals								
Mineral Leases and Permits	CASES	690	730	750	750	780		
HC&D								
Human Resource Programs	EN.YEARS	20	20	20	20	20		
Lands								
Land Pur., Acq., & Exchange	CASES	2	2	2	2	2		
Soils								
Soil & Water Resource Imp.	ACRES	51	63	80	63	38		
Facilities								
Arterial and Collector Roads Construction/Reconstruction	MILES	2	1	1	1	1		
Local Roads								
Construction	MILES	28	18	15	11	7		
Reconstruction	MILES	32	34	21	22	22		
Trail Construction/Reconstruction	MILES	0	0	0	0	0		
BENEFITS M$*								
Recreation								
Developed		1929	2654	3966	5279	8754		
Dispersed		6917	8287	10865	14769	18709		
Wilderness		90	121	191	297	403		
Total		8936	11062	15022	20345	27866		
Range		927	927	927	927	927		
Timber		1211	1257	964	512	740		
Wildlife		5551	5649	5680	5710	5741		
Water Yield		251	485	473	391	350		
Minerals		2884	3081	3038	2899	2828		
Other		21	21	21	21	21		
Total		19781	22482	26125	30805	38473		
RECEIPTS M$								
Recreation - Developed		181	244	358	472	411		
Range		116	116	116	116	116		
Timber		1198	1244	951	499	727		
Minerals		12	13	14	14	14		
Other		21	21	21	21	21		
Total		1528	1638	1460	1122	1289		
COSTS M$								
Timber		2500	1327	1071	1981	1314		
Roads (Appropriated)		48	24	24	24	24		
Recreation		640	743	733	832	653		
Wildlife		119	131	139	136	141		
Range		380	380	386	382	389		
Protection		226	335	335	335	335		
Other		2310	2309	2326	2346	2331		
Total Forest Budget		6223	5249	5014	6036	5187		
O&M		3892	3971	3902	4037	3831		
Investment		2331	1278	1112	1999	1356		
Non-Forest Service Costs (Purchaser Const. Roads)		239	170	118	100	64		
Returns to Treasury		1528	1638	1460	1122	1289		

*Dollar amounts in the following tables are average annual for the decade expressed in 1978 dollars, inflated to 1/1/82.

TABLE II-9a
AVERAGE ANNUAL CASH FLOWS AND NON-CASH BENEFITS *
(Thousands of 1978 Dollars Inflated to 1/1/82)

	DECADE				
ALTERNATIVE A - CURRENT PROGRAM	1	2	3	4	5
Timber					
Costs*	2739	1497	1189	2081	1378
Benefits	1211	1257	964	512	740
Net Benefits	-1528	-240	-225	-1569	-638
Receipts	1198	1244	951	499	727
Net Receipts	-1541	-253	-238	-1582	-651
Non-Cash Benefits	13	13	13	13	13
Recreation					
Costs	640	743	733	832	653
Benefits	8936	11062	15022	20345	27866
Net Benefits	8296	10319	14289	19513	27213
Receipts	181	244	358	472	411
Net Receipts	-459	-499	-375	-360	-242
Non-Cash Benefits	8755	10818	14664	19873	27455
Wildlife					
Costs	119	131	139	136	141
Benefits	5551	5649	5680	5710	5741
Net Benefits	5432	5518	5541	5574	5600
Receipts	0	0	0	0	0
Net Receipts	-119	-131	-139	-136	-141
Non-Cash Benefits	5551	5649	5680	5710	5741
Range					
Costs	380	380	386	382	389
Benefits	927	927	927	927	927
Net Benefits	547	547	541	545	538
Receipts	116	116	116	116	116
Net Receipts	-264	-264	-270	-266	-273
Non-Cash Benefits	811	811	811	811	811
Other					
Costs	2584	2668	2685	2705	2690
Benefits	3156	3587	3532	3311	3199
Net Benefits	572	919	847	606	509
Receipts	33	34	35	35	35
Net Receipts	-2551	-2634	-2650	-2670	-2655
Non-Cash Benefits	3123	3553	3497	3276	3164
Total					
Costs	6462	5419	5132	6136	5251
Benefits	19781	22482	26125	30805	38473
Net Benefits	13319	17063	20993	24669	33222
Receipts	1528	1638	1460	1122	1289
Net Receipts	-4934	-3781	-3672	-5014	-3962
Non-Cash Benefits	18253	20844	24665	29683	37184

* Includes Non-Forest Service Costs (Purchaser Constructed Roads)

i. Protection

The fire protection target organization will be driven by Level II fire analysis, and aimed at the organization that demonstrates the lowest average annual cost and net value change for fire suppression.

2. Alternative B - Composite (Preferred)

This alternative describes a level and trend of goods and services to be provided in the future that in total best meets the issues and concerns. The budget is constrained in the first decade, but increases in subsequent decades to meet projected trends. This alternative provides an "optimum" mix of activities that will provide cost efficiency, socioeconomic stability and meet resource needs.

The goals of this alternative are:

- Continue the existing developed recreation site capacity and adherence to standards to prevent site deterioration. Provide for increased downhill ski area capacity.
- Accommodate an anticipated increase in dispersed recreation visits by providing additional trailhead facilities, trail construction and other facilities designed to enhance dispersed types of recreation.
- Manage the Pine Valley Mountains, Ashdown Gorge, and Box-Death Hollow Wilderness's to a standard level.
- Increase the number of research natural areas.
- Manage wildlife habitat to support viable populations of all native and desired non-native vertebrate species and improve the habitat where needed for selected species.
- Maintain current levels of permitted livestock grazing.
- Maintain investments in structural and non-structural range improvements.
- Maintain timber sale offerings in first decade at a level that will sustain present timber industry. Limit sale offerings on soil types where soil loss tolerance levels cannot be met.
- Improve acres of declining watershed condition by treating the backlog of soil and water restoration needs and improving poor condition range lands.
- Maintain restrictions for mineral leasing activities. Provide prompt responses to mineral requests.
- Provide cost efficient fire suppression.

The objectives that will be needed to meet the above listed goals and expected future conditions of the Forest are described below by major resource areas:

a. Recreation

About 60 percent of the developed site capacity would be managed at full service levels. The remainder would be at reduced service levels. New developed sites would be built at Deer Lake, Pine Valley, and Blue Spring Point to meet increased use and enhance dispersed recreation. The Forest would also rehabilitate and "harden" about 50 developed recreation site units per decade to protect the sites. Expanded downhill ski area capacity by the private sector in the Brian Head and proposed Crystal Mountain area could occur.

Construct a 25 unit campground on the north slope of the Boulder Mountains in Decade 5 to enhance dispersed recreation opportunities. Funding would be available to provide for 80 to 90 percent of operations and maintenance needs. The remaining 10 to 20 percent would be done by Human Resource Programs.

Although the demand on some of the more "popular" developed recreation sites presently exceeds their capacity, the capacity Forest-wide will not be exceeded until about the year 2021.

Provide frequent maintenance of the more heavily used roads and trails. Develop parking and trailhead facilities to accommodate wilderness area users, and winter sport users.

The capacity of the Forest for dispersed recreation use would not be exceeded Forest-wide during the planning period; however, localized "popular" sites will be progressively overused to the point that a "quality" experience is diminished. The construction of 11 trailheads across the forest and the maintenance of 320 miles of trails will help to disperse the use and increase the quality of the experiences. Acreage by ROS class will shift less than 5 percent from the non-motorized to the motorized classes. The Forest would be funded to maintain back country patrols and policing to also help improve the quality. Volunteers would also be used when they are available.

Research Natural Areas would be established at the Timbered Cinder Cone (640 acres), Table Cliff (1,235 acres), and Red Canyon (460 acres) in order to protect their unique characteristics and scientific values. Additional Research Natural Areas may be established if suitable area exist and are needed.

Scenic values along major roads and recreation areas would be protected, as well as increased emphasis on project activities to provide for scenic beauty. In order to comply with the provisions of the National Historic Preservation Act of 1966 (26 CFR 800), most survey efforts would be conducted in the proposed mountain pine beetle timber sale areas until at least 1990 although some work would be required in designated aspen cutting areas for wildlife habitat improvement. After 1990, survey work would continue at the present level in mixed conifer and spruce sales. This alternative, which also increases the impacts to the cultural resource base via dispersed recreation, will require survey in areas that have been proposed for the development of dispersed recreation facilities (trailheads, trails and parking areas). Expanded downhill skiing facilities may also affect cultural resources under this alternative. "Under the preferred alternative, the minimum NFMA requirements will be funded by 074 Recreation dollars and will include the composition of a cultural resource overview, the identification of areas requiring more intensive inventory, National Register evaluations and nominations, protection of significant sites from vandalism and natural destruction, maintenance and interpretation".

b. Wilderness

Management of the Box-Death Hollow and Ashdown Gorge wildernesses would emphasize semi-primitive wilderness settings. The management of the Pine Valley Mountain wilderness would also stress a semi-primitive setting; however, the heavily used areas would require more intensive management. Trails and trailheads will be constructed to disperse use over more of the areas. Volunteers will be used where possible to patrol and cleanup areas. Funding will be available to do 90 percent or more of the operation and maintenance work.

c. Fish and Wildlife

Habitat management would stress mitigation of land use activities to maintain viable populations. An average of 2,670 acres and 165 structures of habitat improvement projects would be initiated annually during the planning period. Low cost prescribed burning for vegetative manipulation and aspen cutting would be emphasized. Protection of big game winter range from livestock use would receive emphasis where needed to provide for wildlife values.

Habitat capability would gradually improve (approximately 10 percent) for many species because of the general improvement in range and wildlife habitat conditions. Deer numbers would not increase on some herd units because of off-Forest development on critical range. Elk would continue to expand their range and population. Snag dependent wildlife species would slowly decline on some areas (primarily the Cedar City R.D.) because of increased access and unauthorized snag cutting. Habitat diversity would improve somewhat as emphasis in timber harvest is shifted to spruce-fir and mixed conifer and some habitat improvement is directed at the browse and aspen types. Fish habitat capability would increase slightly in streams and lakes; however, because of the gradual eutrophication of Panguitch Lake, due to causes beyond Forest Service control, overall capability will decline until the problems are solved.

The necessary coordination would be provided to improve the habitat to assist in the removal of the Utah Prairie dog from threatened and endangered status. This includes providing the Forest's share of transplant sites (11) and cooperating in meeting the objectives of the Utah Prairie Dog Recovery Plan.

d. Range

This alternative would continue current grazing practices and livestock numbers. It would maintain the suitable range in good condition and allow 110,000 acres of poor condition range to improve to at least fair condition. Projected budget levels have been increased to provide essential maintenance of range improvement, particularly the extensive crested wheat reseedings. Increased emphasis would be applied to protect riparian areas.

e. Timber

This alternative would complete timber sales made to minimize impacts of mountain pine beetle by 1990, then continue offering a program of about 26 MMBF with a high percentage of that volume coming from the mixed conifer and spruce types until about 1995 or 2000. Thereafter, conifer harvest volumes would decrease to reflect sanitation and partial cutting in leave strips adjacent to old clearcuts and small, scattered stands. Near the end of the planning period conifer harvest levels would gradually increase as second growth stands achieve harvestable size. The harvest of aspen trees would increase over current levels if a market demand materializes. An average of 5,000 acres of TSI and 1,588 acres of reforestation would be done per year during the first decade.

f. Soil and Water

Aggressive action would be taken to treat the watershed restoration backlog. 725 acres of large size projects will be completed by 1995. 1515 acres of smaller projects will be completed by 2010. Unforeseen damaged watershed areas would be promptly treated.

Watershed conditions would improve significantly by the end of the planning period. Use on riparian areas would be moderate. Existing management-related water quality problems would be mitigated before the end of the planning period. No significant deterioration of water quality would occur. No significant change in water yield would occur.

g. Minerals

The production of oil and gas from Forest lands is expected to remain about constant through the planning period. Coal production would begin on a modest scale about the second decade and gradually increase until the end of the planning period. Request for leasing, permits, etc., would receive prompt responses.

h. Lands

The Land Adjustment Activities (exchange and purchase) Program following the Land Adjustment Program would face some delay in acting on proposals and would involve one to two cases per year. Cases in the first decade will generally be generated by out-of-service requests which would, after the first decade, change to a more aggressive position of contacting potential proponents. Increasing attention after the first decade would be directed toward cases that would protect and assist the increasing needs and demands for dispersed recreation. Securing parking and trailhead areas, as well as rights-of-way for general dispersed activities, wilderness, and winter sports, would gain priority. In view of the increasing dispersed use, selected lands for exchange would receive priority based on the highest value per acre so that the smallest acreage reduction occurs in relation to acreage gained. Releasing land in the Brian Head area or an area of similar potential would accomplish this objective and provide for private expansion and development of services.

Rights-of-way activities following the Rights-of-Way Program would face some delay in response to need, and need would result from current resource projects during first decade. Level of activity during first decade, two to five cases per year. Some roadways (prescriptive) and access to public lands would be blocked by private landowners during the first decade. After the first decade, there would be an increasing program with priority directed not only toward resource needs, but to the increasing recreation demands for easements in response to dispersed use, wilderness, and winter sports. The program would after the first decade, be more responsive to the needs and status of system roads. Priority would be to provide adequate access to all areas with greater than 10,000 acres.

TABLE II-10
RESOURCE OUTPUTS, ACTIVITIES, COSTS AND BENEFITS FOR ALTERNATIVE B COMPOSITE

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE 1	2	3	4	5	10	15
Recreation								
Developed Recreation Use	MRVD	474	651	1060	1652	2010		
Rural ROS		261	358	583	909	1105		
Road Natural ROS		213	293	477	743	804		
Dispersed Recreation Use	MRVD	803	1253	1787	2692	3699		
Primitive ROS								
Semi-Primitive Non-Motor ROS		123	192	258	412	566		
Semi-Primitive Motorized ROS		205	320	430	687	944		
Road Natural ROS		369	575	775	1237	1700		
Rural ROS		106	166	224	355	489		
Dispersed Recreation Use (Wild.)	MRVD	8	13	17	27	38		
Primitive ROS		8	13	17	27	38		
Semi-Primitive Non-Motor ROS								
Wilderness								
Wilderness Management	MACRES	83	83	83	83	83		
Wildlife								
Structural Habitat Improvement-(Terrestrial)	STRUCTS	19	20	21	22	23		
Structural Habitat Improvement-Aquatic	STRUCTS	135	142	145	148	153		
Nonstructural Habitat Improvement-Terrestrial	ACRES	2040	2092	2145	2202	2255		
Nonstructural Habitat Improvement-Aquatic	ACRES	500	510	520	530	540		
Wildlife and Fish Use	MWFUD	180	202	197	202	202		
Range								
Grazing Use (Livestock)	MAUM	115	115	115	115	115		
Wild Horses & Burros	MAUM	0.3	0.3	0.3	0.3	0.3		
Timber								
Allowable Sale Quantity	MMCF	5.1	5.2	5.3	5.3	5.4	5.4	5.4
Allowable Sale Quantity	MMBF	26.4	26.0	26.3	26.4	26.4	22.5	24.4
Sawtimber (Softwood)	MMBF	22.9	15.7	14.9	17.4	21.3	19.5	20.5
Sawtimber (Hardwood)	MMBF	2.8	9.4	10.3	7.8	3.7	1.9	2.7
Roundwood Products	MMBF	0.7	0.9	1.1	1.2	1.4	1.1	1.2
Fuelwood	MMBF	10.7	8.4	8.5	8.0	9.4	8.0	8.1
Reforestation	ACRES	1588	402	454	3353	1646	1382	921
TSI	ACRES	5000	54	1769	628	250	119	0
Water								
Meeting Water Quality Goals	%	98	98	98	100	100		
Increased Yield Over Natural-Forest-Wide	M AC.FT.	4.3	8.3	8.1	6.7	6.0		
Increased Yield Over Natural-Colorado River	M AC.FT.	1.2	2.7	2.6	2.1	1.9		
Protection								
Fuelbreaks and Fuel Treatment	ACRES	10505	7117	4641	5133	4919		

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE						
		1	2	3	4	5	10	15
Minerals								
Mineral Leases and Permits	CASES	691	750	690	665	655		
HC&D								
Human Resource Programs	EN.YEARS	20	20	20	20	20		
Lands								
Land Pur., Acq., & Exchange	CASES	2	3	3	4	4		
Soils								
Soil & Water Resource Imp.	ACRES	85	138	35	20	20		
Facilities								
Arterial and Collector Roads Construction/Reconstruction	MILES	2	1	1	1	1		
Local Roads								
Construction	MILES	28	18	14	11	7		
Reconstruction	MILES	32	34	21	22	21		
Trail Construction/Rconstruction	MILES	33	70	40	0	0		
BENEFITS M$								
Recreation								
Developed		1961	2694	4385	6836	8313		
Dispersed		7651	10016	11796	18542	20088		
Wilderness		90	141	190	304	417		
Total		9702	12851	16371	25682	28818		
Range		927	927	927	927	927		
Timber		1211	1257	964	512	740		
Wildlife		5665	6334	6317	6334	6334		
Water Yield		251	485	473	391	350		
Minerals		2903	3082	3001	2916	2825		
Other		21	21	21	21	21		
Total		20680	24957	28074	36783	40015		
RECEIPTS M$								
Recreation - Developed		184	247	395	608	737		
Range		116	116	116	116	116		
Timber		1198	1244	951	499	727		
Minerals		13	14	12	12	12		
Other		21	21	21	21	21		
Total		1532	1642	1495	1256	1613		
COSTS M$								
Timber		2500	1327	1071	1981	1314		
Roads (Appropriated)		24	0	0	0	0		
Recreation		969	1142	1183	1174	1154		
Wildlife		375	325	357	306	340		
Range		490	632	642	571	573		
Protection		373	335	335	335	335		
Other		2885	3071	2518	2796	2792		
Total Forest Budget		7616	6832	6106	7163	6508		
O&M		4868	5083	4516	4779	4925		
Investment		2748	1749	1590	2384	1583		
Non-Forest Service Costs (Purchaser Const. Roads)		239	170	118	100	64		
Returns to Treasury		1532	1642	1495	1256	1613		

TABLE II-10a
AVERAGE ANNUAL CASH FLOWS AND NON-CASH BENEFITS *
(Thousands of 1978 Dollars Inflated to 1/1/82)

ALTERNATIVE B - COMPOSITE	DECADE 1	2	3	4	5
Timber					
Costs	2739	1497	1189	2081	1378
Benefits	1211	1257	964	512	740
Net Benefits	-1528	-240	-225	-1569	-638
Receipts	1198	1244	951	499	727
Net Receipts	-1541	-253	-238	-1582	-651
Non-Cash Benefits	13	13	13	13	13
Recreation					
Costs	969	1142	1183	1174	1154
Benefits	9702	12851	16371	25682	28818
Net Benefits	8733	11709	15188	24508	27664
Receipts	184	247	395	608	737
Net Receipts	-785	-895	-788	-566	-417
Non-Cash Benefits	9518	12604	15976	25074	28081
Wildlife					
Costs	375	325	357	306	340
Benefits	5665	6334	6317	6334	6334
Net Benefits	5290	6009	5960	6028	5994
Receipts	0	0	0	0	0
Net Receipts	-375	-325	-357	-306	-340
Non-Cash Benefits	5665	6334	6317	6334	6334
Range					
Costs	490	632	642	571	573
Benefits	927	927	927	927	927
Net Benefits	437	295	285	356	354
Receipts	116	116	116	116	116
Net Receipts	-374	-516	-526	-455	-457
Non-Cash Benefits	811	811	811	811	811
Other					
Costs	3282	3406	2853	3131	3127
Benefits	3175	3588	3495	3328	3196
Net Benefits	-107	182	642	197	69
Receipts	34	35	33	33	33
Net Receipts	-3248	-3371	-2820	-3098	-3094
Non-Cash Benefits	3141	3553	3462	3295	3163
Total					
Costs	7855	7002	6224	7263	6572
Benefits	20680	24957	28074	36783	40015
Net Benefits	12825	17955	21850	29520	33443
Receipts	1532	1642	1495	1256	1613
Net Receipts	-6323	-5360	-4729	-6007	-4959
Non-Cash Benefits	19148	23315	26579	35527	38402

i. Protection

The fire protection target organization will be driven by Level II Fire Analysis, and aimed at the organization that demonstrates the lowest average annual cost and net value change for fire suppression.

3. Alternative C - Constrained Budget

This alternative describes the activities and outputs of goods and services that could be provided with a budget that is 25 percent less than the Forest's 1982 budget. The reduced budget would remain constant for the five decades of the planning period. The emphasis would be to maintain the same relative combination of resource activities as the current program alternatives, but adjusted for the budget.

The goals for this alternative are:

- **Continue the existing developed recreation site capacity, but at reduced service level or less. Prevention of site deterioration would not be a goal.**
- **Provide, in spite of deteriorating road and trail systems, the opportunity for dispersed recreation.**
- **Manage the Pine Valley Mountains, Ashdown Gorge, and the Box-Death Hollow wildernesses to a less than standard level.**
- **Increase the number of research natural areas.**
- **Manage wildlife habitat sufficient only to support minimum viable populations of all native and desired non-native vertebrate species.**
- **Reduce the numbers of permitted livestock commensurate with the loss of capacity due to unmaintained range improvements.**
- **Maintenance of range improvements would be on a priority basis to reduce the loss of capacity.**
- **Timber sale offerings having low preparation and road development costs would be stressed.**
- **Emphasize watershed restoration projects that are low cost.**
- **Restrictions on mineral leasing activities would not be emphasized. Response time for mineral requests would be doubled. Require industry to provide environmental and legal studies.**
- **Provide cost efficient fire protection.**

The objectives that will be needed to meet the above listed goals and expected future conditions of the Forest are described below:

a. Recreation

All campgrounds would remain open, but provide only reduced service, maintenance, and cleanup, at the heavily used campgrounds such as Pine Valley, Navajo Lake and Panguitch Lake. All lighter used campgrounds would receive only sporadic and infrequent maintenance and cleanup. No new sites would be built. No rehabilitation or resting of existing sites would occur. Human Resource Programs would be used as much as possible. Even with this program, facilities will disintegrate from overuse and capital investment will be lost.

Allow dispersed recreation users to use the Forest with little expenditure for signing, road maintenance, trail maintenance, etc.

During the planning period developed recreation use would diminish steadily in relation to expected increased demand as recreation areas, roads and trails deteriorate from lack of maintenance and cleanup. Many users would seek more attractive sites outside of the developed sites and dispersed area use would increase at first and then drop toward the end of the planning period as sites become over used and worn out.

Research natural areas would be established on the Timbered Cinder Cone (640 acres), Table Cliff (1,235 acres), and Red Canyon (460 acres) in order to protect their unique characteristics and scientific values.

Scenic values, along major roads and recreation areas, would receive little protection because of the lack of expertise and coordination.

Under a reduced budget, the Cultural Resources Program would continue to survey project areas as they are designated for development. Although support dollars would be less, the program would survive as presently constructed (shared services). The majority of survey work would be conducted in proposed timber sale areas.

b. Wilderness

The management of all wilderness areas would emphasize primitive settings, to allow use to occur where it will without any facilities or content.

Wilderness visits would decrease in relation to apparent demand because of the lack of trail maintenance and construction.

Volunteers and Human Resource Programs would provide the only means of patrolling or policing areas.

c. Fish and Wildlife

Habitat management would stress mitigation of land use activities to maintain only the minimum viable populations. No new habitat improvement structures would be initiated, except for selected projects for threatened, endangered, or sensitive species. Existing structures would be maintained.

During the planning period big game habitat capability would generally decrease because of the deterioration of range condition, reduction in timber sales and limited habitat improvement projects. Habitat for snag and old growth dependent wildlife would increase because of reduced timber activities. Diversity would decrease because of reduced activities in timber and range.

d. Range

Manage livestock range presently in "fair" or better condition so that the range would not deteriorate below "fair". "Poor" condition range would remain "poor".

Due to a decrease in range improvement construction and maintenance and range administration, the capacity of the range would steadily decrease in permitted AUM's and range condition classes.

e. Timber

Offer timber sales in only those areas where tractor logging can take place and where arterial and collector roads are in place.

During the planning period, timber harvest would be reduced from the current level and most of the commercial forest would not be as intensively managed. Some access roads may become unusable due to lack of maintenance. Conditions favoring insect and disease epidemics would increase, especially in the spruce-fir type.

f. Soil and Water

Manage all soil and water resources through mitigation and coordination with other resources to prevent serious degradation below current conditions. The backlog of 725 acres of the larger, high cost watershed projects would not be treated. Most of the backlog of 1515 acres of smaller, low cost projects would be treated by the end of the 5th decade.

Watershed conditions would generally remain static and decline in some areas. Use on riparian areas would increase due to lack of management causing an overall deterioration of the resource. Water quality problems would not be mitigated until after the 50 year planning horizon. The untreated watersheds in the backlog would remain untreated and continue to cause erosion problems.

g. Minerals

The expected production of oil and gas and coal from Forest lands would continue as explained in the Current Program Alternative. However, the industry's requests for permits, leases, etc., would be met in a timely manner only if industry provides data and environmental studies.

Conflicts with the mining industry would increase. Trespass and unpermitted actions would increase. A general slow down in mineral activities would occur.

H. Lands

The land adjustment activities (exchange and purchase) following the Land Adjustment Program would face some delay in acting on proposals and would involve perhaps one case per year. Cases would generally be generated by out-of-service requests. After the first decade, there would be an increasing backlog of cases generated by potential proponents with fewer cases completed.

The program would increasingly take on the characteristics of a deferred action program responsive only to unavoidable targets and the most sensitive cases. The overall result of this alternative to the Forest would be one of lost opportunities in terms of carrying out land management objectives through this program. Under this alternative, the Forest would lose the option of accomplishing land management objectives through this program.

The rights-of-way activities following the Rights-of-Way Program would face some delay in response to need, and need would result from current resource projects. Level of activity during first decade would be perhaps one to two cases per year with an increasing backlog and reduced accomplishment over

TABLE II-11
RESOURCE OUTPUTS, ACTIVITIES, COSTS AND BENEFITS FOR ALTERNATIVE C CONSTRAINED BUDGET

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE 1	2	3	4	5	10	15
Recreation								
Developed Recreation Use	MRVD	269	277	308	362	416		
Rural ROS		148	152	169	199	229		
Road Natural ROS		121	125	138	163	187		
Dispersed Recreation Use	MRVD	731	1125	1341	1995	2651		
Primitive ROS								
Semi-Primitive Non-Motor ROS		103	159	190	283	375		
Semi-Primitive Motorized ROS		221	341	406	604	803		
Road Natural ROS		368	568	677	1007	1339		
Rural ROS		39	57	68	101	134		
Dispersed Recreation Use (Wild.)	MRVD	8	12	14	20	27		
Primitive ROS		8	12	14	20	27		
Semi-Primitive Non-Motor ROS								
Wilderness								
Wilderness Management	MACRES	83	83	83	83	83		
Wildlife								
Structural Habitat Improvement-(Terrestrial)	STRUCTS	2	2	2	2	2		
Structural Habitat Improvement-Aquatic	STRUCTS	5	5	5	5	5		
Nonstructural Habitat Improvement-Terrestrial	ACRES	50	50	50	50	50		
Nonstructural Habitat Improvement-Aquatic	ACRES	0	0	0	0	0		
Wildlife and Fish Use	MWFUD	139	153	146	145	145		
Range								
Grazing Use (Livestock)	MAUM	110	107	105	103	100		
Wild Horses & Burros	MAUM	0.3	0.3	0.3	0.3	0.3		
Timber								
Allowable Sale Quantity	MMCF	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Allowable Sale Quantity	MMBF	22.4	23.5	24.4	24.5	22.8	19.1	23.5
Sawtimber (Softwood)	MMBF	14.1	15.3	19.0	21.2	16.1	14.9	22.1
Sawtimber (Hardwood)	MMBF	7.9	7.8	5.0	2.9	6.2	3.8	1.0
Roundwood Products	MMBF	0.4	0.4	0.4	0.4	0.5	0.4	0.4
Fuelwood	MMBF	7.6	5.5	5.2	5.8	6.6	4.5	5.5
Reforestation	ACRES	315	675	378	1092	1869	1891	2099
TSI	ACRES	447	957	4103	1609	593	0	0
Water								
Meeting Water Quality Goals	%	98	98	98	98	98		
Increased Yield Over Natural-Forest-Wide	M AC.FT.	4.6	6.0	5.2	5.2	6.4		
Increased Yield Over Natural-Colorado River	M AC.FT.	1.2	1.6	1.3	1.6	2.2		
Protection								
Fuelbreaks and Fuel Treatment	ACRES	6525	5558	5077	4713	3787		

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE 1	2	3	4	5	10	15
Minerals								
Mineral Leases and Permits	CASES	595	660	600	575	565		
HC&D								
Human Resource Programs	EN.YEARS	2	2	2	2	2		
Lands								
Land Pur., Acq., & Exchange	CASES	1	1	1	1	1		
Soils								
Soil & Water Resource Imp.	ACRES	33	33	33	33	33		
Facilities								
Arterial and Collector Roads Construction/Reconstruction	MILES	1	0	0	0	0		
Local Roads								
Construction	MILES	15	18	17	17	10		
Reconstruction	MILES	33	23	15	13	16		
Trail Construction/Rconstruction	MILES	0	0	0	0	0		
BENEFITS M$								
Recreation								
Developed		1113	1147	1274	1498	1722		
Dispersed		6880	8250	8500	11620	13040		
Wilderness		83	128	151	223	297		
Total		8076	9525	9925	13341	15059		
Range		887	862	847	830	806		
Timber		1151	976	950	753	248		
Wildlife		5631	5289	4993	4949	4976		
Water Yield		268	350	304	304	374		
Minerals		2665	2765	2726	2698	2700		
Other		21	21	21	21	21		
Total		18699	19788	19766	22896	24184		
RECEIPTS M$								
Recreation - Developed		110	113	124	143	163		
Range		111	108	106	104	101		
Timber		1138	963	937	740	235		
Minerals		11	12	11	10	10		
Other		21	21	21	21	21		
Total		1391	1217	1199	1018	530		
COSTS M$								
Timber		1227	1332	1331	1332	1331		
Roads (Appropriated)		48	24	24	24	24		
Recreation		477	483	531	536	540		
Wildlife		52	53	56	59	60		
Range		240	234	229	224	228		
Protection		357	342	346	346	346		
Other		1737	1758	1735	1713	1701		
Total Forest Budget		4138	4226	4252	4234	4230		
O&M		2984	2950	2919	2898	2863		
Investment		1154	1276	1333	1336	1367		
Non-Forest Service Costs (Purchaser Const. Roads)		143	147	123	115	76		
Returns to Treasury		1391	1217	1199	1018	530		

TABLE II-11a
AVERAGE ANNUAL CASH FLOWS AND NON-CASH BENEFITS *
(Thousands of 1978 Dollars Inflated to 1/1/82)

ALTERNATIVE C - CONSTRAINED BUDGET	DECADE 1	2	3	4	5
Timber					
Costs	1370	1479	1454	1447	1407
Benefits	1151	976	950	753	248
Net Benefits	-219	-503	-504	-694	-1159
Receipts	1138	963	937	740	235
Net Receipts	-232	-516	-517	-707	-1172
Non-Cash Benefits	13	13	13	13	13
Recreation					
Costs	477	483	531	536	540
Benefits	8076	9525	9925	13341	15059
Net Benefits	7599	9042	9394	12805	14519
Receipts	110	113	124	143	163
Net Receipts	-367	-370	-407	-393	-377
Non-Cash Benefits	7966	9412	9801	13198	14896
Wildlife					
Costs	52	53	56	59	60
Benefits	5631	5289	4993	4949	4976
Net Benefits	5579	5236	4937	4890	4916
Receipts	0	0	0	0	0
Net Receipts	-52	-53	-56	-59	-60
Non-Cash Benefits	5631	5289	4993	4949	4976
Range					
Costs	240	234	229	224	228
Benefits	887	862	847	830	806
Net Benefits	647	628	618	606	578
Receipts	111	108	106	104	101
Net Receipts	-129	-126	-123	-120	-127
Non-Cash Benefits	776	754	741	726	705
Other					
Costs	2142	2124	2105	2083	2171
Benefits	2954	3136	3051	3023	3095
Net Benefits	812	1012	946	940	1024
Receipts	32	33	32	31	31
Net Receipts	-2110	-2091	-2073	-2052	-2040
Non-Cash Benefits	2922	3103	3019	2992	3064
Total					
Costs	4281	4373	4375	4349	4306
Benefits	18699	19788	19766	22896	24184
Net Benefits	14418	15415	15391	18547	19878
Receipts	1391	1217	1199	1018	530
Net Receipts	-2890	-3156	-3176	-3331	-3776
Non-Cash Benefits	17308	18571	18567	21878	23654

* Includes Non-Forest Service Costs (Purchaser Constructed Roads)

time. An increasing number of roadways (prescriptive) and access points to public lands will be blocked by private landowners. Some resource projects would have to be deferred or alternate projects selected due to the inability of the program to respond. Under this alternative the Forest would lose the option of solving management problems involving rights-of-way through this program.

i. Protection

The fire protection target organization will be driven by Level II fire analysis, and aimed at the organization that demonstrates the lowest average annual cost and net value change for fire suppression.

4. Alternative D - Current Budget

This alternative describes the activities and outputs of goods and services that could be provided with a constant budget similar to the Forest's 1982 budget. The emphasis would be to maintain the same combination of resource activities as the Current Program Alternative, but reduced because the Forest could not meet increased demands, nor continuation of some existing facilities and improvements.

The goals for this alternative are:

- Maintain the existing developed recreation site capacity with reduced services and facilities. Adhere to standards to prevent site deterioration.
- Accommodate an anticipated increase in dispersed recreation visits with the existing services and facilities.
- Protect the wilderness values of the Pine Valley Mountain, Ashdown Gorge, and Box-Death Hollow areas, maintain to less than standard level.
- Increase the number of research natural areas.
- Manage wildlife habitat to support minimum viable populations of all native and desired non-native vertebrate species and maintain existing habitat improvements.
- Reduce the numbers of livestock commensurate with the loss of capacity due to unmaintained crested wheat reseedings.
- Maintain investment in structural and non-structural range improvements on a priority basis of cost efficiency.
- Complete the current timber harvest program for mountain pine beetle affected timber then reduce timber sale offerings described in the current timber, management plan to avoid sale offerings with high preparation, and road development costs.
- Improve acres of declining watershed condition by treating most of the backlog of soil and water restoration needs and improving one-half of poor condition rangeland.
- Maintain restrictions for mineral leasing activities. Provide prompt responses to mining industry requests.
- Provide cost efficient fire suppression.

The objectives that will be needed to meet the above listed goals and expected future conditions of the Forest are described below by major resource areas:

a. **Recreation**

Manage all existing sites at reduced service levels. Rehabilitation of existing sites would stress replacement of facilities with high maintenance cost by facilities with low maintenance costs and would stress "hardening" (artificial surfacing) of sites to reduce maintenance costs. About 30 site units would be rehabilitated per decade. Although the demand on some of the more "popular" developed recreation sites presently exceeds their capacity, the demand rate would increase more slowly than alternatives that protect or add new facilities, because of the lower quality facilities available. Thus, the capacity Forest-wide would not be exceeded until about the year 2010. After this period, the continual increasing demand would create a situation that has people camping off-Forest or camping on-Forest in undeveloped areas. Ten percent of the developed site capacity would need to be closed each decade due to the loss of facilities and to protect soil, water, and vegetative resources. Sixty to seventy percent of maintenance will be accomplished by Human Resource Programs. If these programs are not available, more of the facilities will be lost and use in developed sites will drop more drastically.

Trail and road maintenance for recreation purposes would continue on only the more heavily used trails and roads and those with national significance.

The capacity of the Forest for dispersed recreation use would not be exceeded Forest-wide during the planning period; however, localized "Popular" sites would be progressively overused to the point that a "quality" experience may not be available by the end of the planning period. Acreage, by ROS class, would shift less than five percent from the non-motorized to the motorized classes.

Research natural areas would be established at the Timbered Cinder Cone (640 acres), Table Cliff (1,235 acres), and Red Canyon (460 acres) in order to protect their unique characteristics and scientific values.

Scenic values along major roads and recreation areas would be protected.

Most culture resource survey efforts would be conducted in the proposed mountain pine beetle timber sale areas until at least 1990 although some work would be required in designated aspen cutting areas for wildlife habitat improvement. After 1990, survey work would continue at near the present level in mixed conifer and spruce sales. Occasional range projects (structural & non-Structural) can also be expected. Dispersed recreation, which is emphasized under this alternative, will result in increased impacts to the cultural resource base.

b. Wilderness

Management of the Box-Death Hollow and Ashdown Gorge wildernesses would emphasize semi-primitive Wilderness settings. Management of the Pine Valley Mountain wilderness would also stress semi-primitive setting, however, the heavily used areas will require more intensive management. One trailhead will be constructed at each of the wilderness areas; however, only one percent of the trails will be maintained and resource damage will likely occur. Volunteers and Human Resource Programs will be relied on to provide 70 to 80 percent of patrolling and cleanup.

c. Fish and Wildlife

Habitat management would stress mitigation of land use activities to maintain viable populations. Approximately 725 acres and 28 structures of habitat improvement projects would be initiated annually. Prescribed burning for vegetative manipulation and aspen cutting would remain at low levels. Protection of big game winter range from livestock use would not receive heavy emphasis.

Habitat capability would remain static for many species because of the general lack of improvement in range condition. Deer numbers would probably decline somewhat on some herd units because of off-Forest development on critical range. Elk would continue to expand their range and population. Snag dependent wildlife species would steadily decline on some areas (primarily the Cedar City R.D.) because of increased access and unauthorized snag cutting. Habitat diversity would improve somewhat as emphasis in timber harvest is shifted to spruce-fir and mixed conifer and some habitat improvement is directed at the browse and aspen types. Fish habitat capability would remain unchanged in streams and lakes, however, because of the gradual eutrophication of Panguitch Lake, due mostly to causes beyond Forest Service control, overall capability would decline until the problems are solved.

The necessary coordination would be provided to improve the habitat to assist in the removal of the Utah Prairie dog from threatened and endangered status. This includes providing the Forest's share of transplant sites (11) and cooperating in meeting the objectives of the Utah Prairie Dog Recovery Plan.

d. Range

This alternative would continue grazing practices that would maintain suitable native range in good condition and allow about half of the 110,000 acres of poor condition native range to improve to at least fair condition by the fifth decade. However, the budget level is insufficient to provide essential maintenance of range improvement, particularly the extensive crested wheat reseedings.

e. Timber

This alternative would complete timber sales made to minimize impacts of mountain pine beetle by 1990, then continue offering about 28 MMBF per year with a high percentage of that volume coming from the mixed conifer type and spruce types until about 1995 or 2000. Thereafter, conifer harvest volumes would decrease slightly during the second decade to reflect sanitation and partial harvesting of leave strips adjacent to old clearcuts and small scattered stands. Conifer harvest levels would continue at near current levels for the rest of the planning period. The harvest of aspen trees would increase over current levels if a market demand materializes. A balance of timber age classes would not be achieved until about 2235. Many areas would remain susceptible to insect and disease infestations.

f. Soil and Water

Watershed restoration would be completed on 725 acres of the backlog of large projects. Only 935 of 1515 acres of smaller watershed restoration projects would be completed by the end of the planning period.

Watershed conditions will improve. Approximately one-half of the acres of declining watershed condition would be improved by the end of the planning period. Use on riparian areas will remain moderate. Existing management-related water quality problems will be mitigated before the end of the planning period. :No significant deterioration of water quality will occur. No significant change in water yield will occur.

g. Minerals

The production of oil and gas from Forest lands is expected to remain about constant through the planning period. Coal production would begin on a modest scale about the second decade and gradually increase until the end of the planning period. Request for leasing, permits, etc., would receive prompt responses.

h. Lands

The land adjustment activities (exchange and purchase) following the Land Adjustment Program would face some delay in acting on proposals and would involve one to two case per year. Cases would generally be generated by out-of-service requests. After the first decade, there would be an increasing backlog of cases generated by potential proponents with fewer cases completed. The program would increasingly take on the characteristics of a deferred action program responsive only to unavoidable targets and the most sensitive cases. Land adjustment activities assisting the increasing need for dispersed recreation would receive priority. The overall result of this alternative to the Forest would be one of lost opportunities in terms of carrying out land management objectives through this program. Under this alternative, with 1982 funding, the accomplishments must decrease.

The rights-of-way activities following the Rights-of-Way Program would face some delay in response to need, and need would result from current resource projects. Level of activity during first decade would be perhaps 2 to 3 cases per year with an increasing backlog and reduced accomplishment over time. An increasing number of roadways (prescriptive) and access points to public lands would be blocked by private landowners. Some resource projects would have to be deferred or alternate projects selected due to the inability of the program to respond. The 1982 funding would not maintain a viable program by which the Forest can solve its road and trail problems.

TABLE II-12
RESOURCE OUTPUTS, ACTIVITIES, COSTS AND BENEFITS FOR ALTERNATIVE D CURRENT BUDGET

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE						
		1	2	3	4	5	10	15
Recreation								
Developed Recreation Use	MRVD	466	468	507	525	543		
Rural ROS		256	258	279	289	299		
Road Natural ROS		210	211	228	236	244		
Dispersed Recreation Use	MRVD	806	1070	1708	2656	3604		
Primitive ROS								
Semi-Primitive Non-Motor ROS		114	151	242	376	510		
Semi-Primitive Motorized ROS		244	324	518	805	1092		
Road Natural ROS		366	486	776	1207	1638		
Rural ROS		81	109	173	269	364		
Dispersed Recreation Use (Wild.)	MRVD	8	11	17	27	36		
Primitive ROS		8	11	17	27	36		
Semi-Primitive Non-Motor ROS								
Wilderness								
Wilderness Management	MACRES	83	83	83	83	83		
Wildlife								
Structural Habitat Improvement-(Terrestrial)	STRUCTS	10	10	8	6	5		
Structural Habitat Improvement-Aquatic	STRUCTS	20	20	20	20	20		
Nonstructural Habitat Improvement-Terrestrial	ACRES	640	620	600	560	480		
Nonstructural Habitat Improvement-Aquatic	ACRES	160	155	150	140	120		
Wildlife and Fish Use	MWFUD	175	172	168	166	164		
Range								
Grazing Use (Livestock)	MAUM	115	115	115	115	115		
Wild Horses & Burros	MAUM	0.3	0.3	0.3	0.3	0.3		
Timber								
Allowable Sale Quantity	MMCF	5.6	5.6	5.6	5.6	5.6	5.6	5.6
Allowable Sale Quantity	MMBF	27.0	28.4	29.2	28.9	28.2	23.0	27.4
Sawtimber (Softwood)	MMBF	19.7	17.4	23.8	20.9	23.2	18.0	20.3
Sawtimber (Hardwood)	MMBF	6.5	10.6	4.6	7.2	4.2	4.2	6.1
Roundwood Products	MMBF	0.8	0.4	0.8	0.8	0.8	0.8	1.0
Fuelwood	MMBF	10.1	7.2	6.8	7.7	8.7	7.5	8.5
Reforestation	ACRES	830	476	720	2641	2400	2529	1206
TSI	ACRES	980	1556	3801	1251	264	550	0
Water								
Meeting Water Quality Goals	%	98	98	98	100	100		
Increased Yield Over Natural-Forest-Wide	M AC.FT.	4.8	7.6	6.9	7.0	7.0		
Increased Yield Over Natural-Colorado River	M AC.FT.	1.1	2.0	2.0	2.2	2.5		
Protection								
Fuelbreaks and Fuel Treatment	ACRES	7957	7717	6954	4471	5342		

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE						
		1	2	3	4	5	10	15
Minerals								
Mineral Leases and Permits	CASES	691	750	690	665	655		
HC&D								
Human Resource Programs	EN.YEARS	20	20	20	20	20		
Lands								
Land Pur., Acq., & Exchange	CASES	2	1	2	1	1		
Soils								
Soil & Water Resource Imp.	ACRES	43	46	68	68	47		
Facilities								
Arterial and Collector Roads								
Construction/Reconstruction	MILES	2	1	1	1	1		
Local Roads								
Construction	MILES	15	28	20	12	6		
Reconstruction	MILES	38	26	17	20	25		
Trail Construction/Reconstruction	MILES	0	0	0	0	0		
BENEFITS M$								
Recreation								
Developed		1930	1938	2097	2173	2247		
Dispersed		7067	8261	10724	14625	18593		
Wilderness		90	119	190	297	402		
Total		9087	10318	13011	17095	21242		
Range		927	927	927	927	927		
Timber		1495	1056	528	862	895		
Wildlife		5637	5936	5509	5481	5493		
Water Yield		280	444	403	409	409		
Minerals		2903	3082	3001	2916	2825		
Other		21	21	21	21	21		
Total		20350	21784	23400	27711	31812		
RECEIPTS M$								
Recreation - Developed		181	181	196	202	208		
Range		116	116	116	116	116		
Timber		1482	1043	515	849	882		
Minerals		13	14	12	12	12		
Other		21	21	21	21	21		
Total		1813	1375	860	1200	1239		
COSTS M$								
Timber		1824	1716	1736	1810	1799		
Roads (Appropriated)		183	23	24	24	24		
Recreation		717	847	667	681	704		
Wildlife		126	120	117	113	110		
Range		310	309	300	267	271		
Protection		230	345	335	345	345		
Other		2083	2103	2070	2067	2079		
Total Forest Budget		5473	5463	5249	5307	5332		
O&M		3561	3833	3536	3441	3495		
Investment		1912	1630	1713	1866	1837		
Non-Forest Service Costs (Purchaser Const. Roads)		159	227	146	99	68		
Returns to Treasury		1813	1375	860	1200	1239		

TABLE II-12a
AVERAGE ANNUAL CASH FLOWS AND NON-CASH BENEFITS *
(Thousands of 1978 Dollars Inflated to 1/1/82)

	DECADE				
ALTERNATIVE D - CURRENT BUDGET	1	2	3	4	5
Timber					
Costs	1983	1943	1882	1909	1867
Benefits	1495	1056	528	862	895
Net Benefits	-488	-887	-1354	-1047	-972
Receipts	1482	1043	515	849	882
Net Receipts	-501	-900	-1367	-1060	-985
Non-Cash Benefits	13	13	13	13	13
Recreation					
Costs	717	847	667	681	704
Benefits	9087	10318	13011	17095	21242
Net Benefits	8370	9471	12334	16414	20538
Receipts	181	181	196	202	208
Net Receipts	-536	-666	-471	-479	-496
Non-Cash Benefits	8906	10137	12815	16893	21034
Wildlife					
Costs	126	120	117	113	110
Benefits	5637	5936	5509	5481	5493
Net Benefits	5511	5816	5392	5368	5383
Receipts	0	0	0	0	0
Net Receipts	-126	-120	-117	-113	-110
Non-Cash Benefits	5637	5936	5509	5481	5493
Range					
Costs	310	309	300	267	271
Benefits	927	927	927	927	927
Net Benefits	617	618	627	660	656
Receipts	116	116	116	116	116
Net Receipts	-194	-193	-184	-151	-155
Non-Cash Benefits	811	811	811	811	811
Other					
Costs	2496	2471	2429	2436	2448
Benefits	3204	3547	3425	3346	3255
Net Benefits	708	1076	996	910	807
Receipts	34	35	33	33	33
Net Receipts	-2462	-2436	-2396	-2403	-2415
Non-Cash Benefits	3174	3516	3394	3317	3226
Total					
Costs	5632	5690	[illegible]395	5406	5400
Benefits	20350	21784	23400	27711	31812
Net Benefits	14718	16094	18005	22305	26412
Receipts	1813	1375	860	1200	1239
Net Receipts	-3819	-4315	-4535	-4206	-4161
Non-Cash Benefits	18541	20413	22542	26515	30577

i. Protection

The fire protection target organization will be driven by Level II fire analysis, and aimed at the organization that demonstrates the lowest average annual cost and net value change for fire suppression. Because of reduced budgets there will be larger fires, more resource damage and more FFF money spent.

5. Alternative E - Non-Market Emphasis

This alternative describes the activities and outputs of goods and services that could be provided if emphasis was provided to the amenity values. Outputs for water, wildlife, and dispersed recreation would increase and quality would be enhanced. Conversely, timber, range, and developed recreation would be managed at a lower level or in such a manner that would enhance amenity and dispersed recreation values. The budget is constrained in the first decade only.

The goals of this alternative are:

- Expand the developed recreation site capacity in areas where expansion will enhance dispersed recreation and continue adherence to standards to prevent site deterioration. Provide emphasis in expansion of site capacity to enhance quality and opportunities to emphasize dispersed recreation.
- Accommodate and enhance the quality experience for the anticipated increase in dispersed recreation visits.
- Protect the wilderness values of the Pine Valley Mountains, Ashdown Gorge, and Box-Death Hollow areas, maintain to a standard level.
- Increase the number of Research Natural Areas.
- Manage wildlife habitat to support optimum population of native and desired non-native wildlife species.
- Reduce the current levels of permitted livestock grazing to enhance wildlife, scenic, and recreation values.
- Maintain investments in structural and non-structural range improvements.
- Modify timber harvest and cultural activities to enhance wildlife, scenic, and recreation values.
- Improve acres of declining watershed condition by treating the backlog of soil and water restoration needs and improving poor condition rangeland.
- Increase the current restrictions for mineral leasing activities to protect environmental values. Provide prompt responses to mineral requests.
- Rehabilitate soil and water values damaged by future mining activities.
- Provide cost efficient fire suppression.

The objectives that will be needed to meet the above listed goals and the expected future conditions of the Forest are described below by major resource areas.

d. Recreation

Dispersed recreation areas would be enhanced by "hardening" (artificial surfacing) and operating at full service 80% of those existing campgrounds that serve as a major base for dispersed recreation activities. The remaining 20 percent of the campground units would be operated at a reduced service level. Fifty to sixty percent of the maintenance at developed sites would be done by Human Resource Program. Expand existing developed sites and/or construct new sites at Deer Lakes, Cowpuncher, Barker Lake and Pine Valley, where the existence of developed sites will enhance opportunities for dispersed recreation.

Frequent maintenance would be provided on all 641 miles of trails on the Forest to provide safety and convenience for trail users. Parking and facilities for horses at 10 trailhead locations would be developed during the planning period. All 641 miles of trails on the Forest would be reworked every 20 years to relocate steep and wet areas and prevent resource damage. Five parking facilities for snowmobiling and an equal number for cross country skiing would be developed and maintained during the planning period. Twenty one hundred miles of Forest roads would be kept safe for travel by passenger vehicles during the planning period. An agreement would be entered into with Utah Department of Transportation and Department of Parks and Recreation to maintain winter parking areas and trails.

Developed recreation site capacity Forest-wide would not exceed demand until approximately the year 2015. However, the capacity of the more popular sites would be exceeded earlier. Existing sites would be hardened (artificial surfacing) and upgraded. The overflow from developed sites would move to dispersed areas off the Forest. The capacity for dispersed recreation would not be exceeded Forest-wide. Localized popular sites would be progressively overused to the point that a quality experience is diminished. The facilities planned for construction would provide a much higher quality of experience and reduce conflicts between users more than any of the other alternatives. Acreage by ROS class would shift less than five percent from the non-motorized to the motorized classes.

Research National Areas would be established at the Timbered Cinder Cone (640 acres), table cliff (1235 acres), and Red Canyon (460 acres) in order to protect their unique characteristics and scientific values.

Scenic values along major roads and recreation areas would be protected as well as a general emphasis on all project activities to provide for scenic quality.

This alternative, which calls for reductions in the harvest levels of timber and curtails grazing, would impact the cultural resources program by reducing support money. As presently constructed (shared services), the program would survive and projects would be surveyed as they were proposed. Survey work, in conjunction with an emphasis on dispersed recreation, would be conducted in areas of proposed facility development (trailheads, trails, parking areas, horse and snowmobile facilities). Land exchange activity, designed to acquire tracts for recreational facility development, would increase. Increased wildlife habitat improvement (burns and aspen cuttings) would require more survey for this element than previously required in the past. Survey would also be required for range improvements designed to protect riparian and big game winter range areas.

b. Wilderness

Management of Ashdown Gorge and Box-Death Hollow wilderness would emphasize primitive wilderness settings. The management of the Pine Valley Mountains Wilderness would also be semi-primitive, however, the heavily used areas would require more intensive management. New trailheads would be constructed to provide parking and access points. All of the system trails in the wilderness areas would be maintained yearly. Patrolling and policing of the areas would be done by Forest Service employees.

c. Fish and Wildlife

Habitat management would stress mitigation of land use activities to maintain viable populations and increased habitat improvements to increase numbers above viable levels. An average of 2,020 acres and 50 structures of habitat improvement projects would be initiated annually during the planning period. Prescribed burning for vegetative manipulation and aspen cutting would be at moderate to high levels. Protection of big game winter range and riparian areas from livestock use would receive heavy emphasis.

Habitat capability would improve for many species because of the general improvement in habitat conditions. Deer numbers would not increase dramatically on some herd units because of off-Forest development on critical range. Elk would continue to expand their range and population. Snag dependent wildlife species would remain only static on some areas (primarily the Cedar City R.D.) because of unauthorized snag cutting. Habitat diversity would improve as emphasis in timber harvest is shifted to spruce-fir and mixed conifer and habitat improvement is directed at the browse and aspen types. Fish habitat capability on many streams and small lakes would increase, but overall there would be a decline as the result of eutrophication of Panguitch Lake, due mostly to causes beyond Forest Service control, however, it is anticipated that eutrophication problems would be solved by the fifth decade and overall capability will increase.

To assist in removal of the Utah prairie dog from threatened and endangered status. This includes providing the Forest's share of transplant sites (11) and cooperating in meeting the objectives of the Utah Prairie Dog Recovery Plan. The necessary coordination would be provided to improve the habitat.

d. Range

Grazing levels would decline somewhat because of efforts to reduce use on riparian areas, big game winter range, and areas of heavy dispersed recreation use.

This alternative would continue grazing practices that would maintain the suitable range in good range condition and allow 110,000 acres of poor condition range to improve to at least fair condition by the end of the fifth decade. Additional range improvements would be needed to protect riparian and big game winter range areas. Maintenance of existing improvements would intensify to keep capacity levels high on non-wildlife important areas.

e. Timber

All timber harvest and cultural treatments would be to enhance wildlife habitat and dispersed recreation values. Timber harvest volumes would decrease from current and be offered only for tractor logging sales. The emphasis on aspen harvest would be to provide for wildlife habitat for big game. Habitat for other species, especially cavity nesting birds would be protected during these activities.

The low level of timber harvest would delay the achievement of a managed stand condition and balance of age classes until about 2230. Insect and disease losses would continue at a high level. The harvest emphasis would remain about the same as current in spruce-fir stands, decrease in ponderosa pine stands, and increase in aspen stands.

f. Soil and Water

Watershed Restoration Program would be accelerated completing 725 acres of larger scale projects before the year 1995. Emphasis would shift later in the planning period to complete all small scale projects and fencing to protect some key riparian areas by the end of the third decade.

Watershed conditions would improve significantly. Overall use on riparian areas would decline, although recreational use would increase due to significantly improved conditions. Existing management-related water quality problems would be mitigated before the end of the period. Water quality would generally improve across the Forest. No significant changes in water yield will occur.

g. Minerals

The production of oil and gas from Forest lands is expected to remain about constant through the planning period. Coal production would begin on a modest scale about the second decade and gradually increase until the end of the planning period. Request for leasing, permits, etc., would receive prompt responses. Rehabilitation of disturbed mining areas would be emphasized.

h. Lands

The Land Adjustment Activities (exchange and purchase) following the Land Adjustment Program will face some delay in acting on proposals and would involve one to two cases per year. Cases in the first decade would generally be generated by out-of-service requests which would after the first decade, change to a more aggressive position of contacting potential proponents. Increasing attention after the first decade would be directed toward cases that would protect and assist the increasing needs and demands of recreation. Securing parking and trailhead areas as well as rights-of-way for general dispersed activities, wilderness, and winter sports would gain priority. The program would also consider wildlife and scenic needs. In view of the increasing demand for dispersed use, selected lands for exchange would receive priority based on the highest value per acre so that the smallest acreage reduction occurs in relation to acreage gained. Releasing land in the Brian Head area or an area of similar potential would accomplish this objective and provide for private expansion and development of services. Under this alternative the program would gradually gain in its ability to meet the need and demands outlined in the alternative.

Rights-of-way activities following the Rights-of-Way Program would face some delay in response to need, and need would result from current resource projects during first decade. Level of activity during first decade, two to five cases per year. Some roadways (prescriptive) and access to public lands would be blocked by private landowners during the first decade. After the first decade, there would be an increased program with priority directed toward the

TABLE II-13
RESOURCE OUTPUTS, ACTIVITIES, COSTS AND BENEFITS FOR ALTERNATIVE E NON-MARKET EMPHASIS

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE 1	2	3	4	5	10	15
Recreation								
Developed Recreation Use	MRVD	442	525	740	837	1014		
Rural ROS		243	289	407	407	558		
Road Natural ROS		199	236	333	430	456		
Dispersed Recreation Use	MRVD	798	1256	1700	2728	3755		
Primitive ROS								
Semi-Primitive								
Non-Motor ROS		120	188	255	409	563		
Semi-Primitive								
Motorized ROS		319	502	680	1091	1502		
Road Natural ROS		279	440	595	955	1314		
Rural ROS		80	126	170	273	376		
Dispersed Recreation Use (Wild.)	MRVD	8	13	17	27	38		
Primitive ROS		8	13	17	27	38		
Semi-Primitive								
Non-Motor ROS								
Wilderness								
Wilderness Management	MACRES	83	83	83	83	83		
Wildlife								
Structural Habitat Improvement-(Terrestrial)	STRUCTS	11	16	17	17	18		
Structural Habitat Improvement-Aquatic	STRUCTS	39	44	33	30	30		
Nonstructural Habitat Improvement-Terrestrial	ACRES	1630	1900	1902	1902	1902		
Nonstructural Habitat Improvement-Aquatic	ACRES	230	230	145	135	120		
Wildlife and Fish Use	MWFUD	183	211	204	211	211		
Range								
Grazing Use (Livestock)	MAUM	90	90	90	90	90		
Wild Horses & Burros	MAUM	0.3	0.3	0.3	0.3	0.3		
Timber								
Allowable Sale Quantity	MMCF	4.7	5.2	5.3	5.3	5.3	5.3	5.3
Allowable Sale Quantity	MMBF	21.5	24.0	24.5	24.9	23.7	21.2	23.6
Sawtimber (Softwood)	MMBF	15.5	11.4	13.7	14.5	15.5	11.6	11.7
Sawtimber (Hardwood)	MMBF	3.5	8.7	6.7	6.2	3.9	5.6	7.9
Roundwood Products	MMBF	2.5	3.9	4.1	4.2	4.3	4.0	4.0
Fuelwood	MMBF	7.5	8.4	8.4	8.4	8.4	8.4	8.4
Reforestation	ACRES	586	345	681	1677	2814	689	729
TSI	ACRES	37	645	2171	627	226	1717	0
Water								
Meeting Water Quality Goals	%	98	98	98	100	100		
Increased Yield Over Natural-Forest-Wide	M AC.FT.	3.9	5.7	5.6	5.7	5.4		
Increased Yield Over Natural-Colorado River	M AC.FT.	0.9	1.4	1.4	1.6	1.9		
Protection								
Fuelbreaks and Fuel Treatment	ACRES	6775	4350	3779	4324	4198		

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE						
		1	2	3	4	5	10	15
Minerals								
Mineral Leases and Permits	CASES	652	714	654	629	629		
HC&D								
Human Resource Programs	EN.YEARS	20	20	20	20	20		
Lands								
Land Pur., Acq., & Exchange	CASES	2	2	3	2	3		
Soils								
Soil & Water Resource Imp.	ACRES	85	138	35	20	20		
Facilities								
Arterial and Collector Roads Construction/Reconstruction	MILES	2	1	1	1	1		
Local Roads								
Construction	MILES	9	19	11	7	5		
Reconstruction	MILES	31	18	20	23	23		
Trail Construction/Rconstruction	MILES	37	38	38	33	33		
BENEFITS M$								
Recreation								
Developed		1831	2173	3060	3060	4197		
Dispersed		7174	15589	11333	15509	19802		
Wilderness		91	141	190	304	417		
Total		9096	17903	14583	18873	24416		
Range		725	725	725	725	725		
Timber		1261	930	897	800	990		
Wildlife		5643	6284	6203	6178	6203		
Water Yield		228	333	327	333	315		
Minerals		2898	3078	3034	2913	2822		
Other		21	21	21	21	21		
Total		19872	29274	25790	29843	35492		
RECEIPTS M$								
Recreation - Developed		172	202	279	314	378		
Range		91	91	91	91	91		
Timber		1248	917	884	787	977		
Minerals		12	13	12	11	11		
Other		21	21	21	21	21		
Total		1544	1244	1287	1224	1478		
COSTS M$								
Timber		1228	969	1065	1358	1563		
Roads (Appropriated)		24	23	24	24	24		
Recreation		2304	1710	2017	2011	2108		
Wildlife		222	267	274	309	332		
Range		293	265	272	275	280		
Protection		357	345	345	345	345		
Other		2329	2216	2243	2307	2281		
Total Forest Budget		6757	5796	6240	6629	6933		
O&M		5057	4246	4456	4695	4805		
Investment		1700	1550	1784	1934	2128		
Non-Forest Service Costs (Purchaser Const. Roads)		123	124	101	120	49		
Returns to Treasury		1544	1244	1287	1224	1478		

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TABLE II-13a
AVERAGE ANNUAL CASH FLOWS AND NON-CASH BENEFITS *
(Thousands of 1978 Dollars Inflated to 1/1/82)

ALTERNATIVE E - NON-MARKET	DECADE 1	2	3	4	5
Timber					
Costs	1351	1093	1166	1478	1612
Benefits	1261	930	897	800	990
Net Benefits	-90	-163	-269	-678	-622
Receipts	1248	917	884	787	977
Net Receipts	-103	-176	-282	-691	-635
Non-Cash Benefits	13	13	13	13	13
Recreation					
Costs	2304	1710	2017	2011	2108
Benefits	9096	17903	14583	18873	24416
Net Benefits	6792	16193	12566	16862	22308
Receipts	172	202	279	314	378
Net Receipts	-2132	-1508	-1738	-1697	-1730
Non-Cash Benefits	8924	17701	14304	18559	24038
Wildlife					
Costs	222	267	274	309	332
Benefits	5643	6284	6203	6178	6203
Net Benefits	5421	6017	5929	5869	5871
Receipts	0	0	0	0	0
Net Receipts	-222	-267	-274	-309	-332
Non-Cash Benefits	5643	6284	6203	6178	6203
Range					
Costs	293	265	272	275	280
Benefits	725	725	725	725	725
Net Benefits	432	460	453	450	445
Receipts	91	91	91	91	91
Net Receipts	-202	-174	-181	-184	-189
Non-Cash Benefits	634	634	634	634	634
Other					
Costs	2710	2585	2612	2676	2650
Benefits	3147	3432	3382	3267	3158
Net Benefits	437	847	770	591	508
Receipts	33	34	33	32	32
Net Receipts	-2677	-2551	-2579	-2644	-2618
Non-Cash Benefits	3112	3396	3349	3233	3124
Total					
Costs	6880	5920	6341	6749	6982
Benefits	19872	29274	25790	29843	35492
Net Benefits	12992	23354	19449	23094	28510
Receipts	1544	1244	1287	1224	1478
Net Receipts	-5336	-4676	-5054	-5525	-5504
Non-Cash Benefits	18326	28028	24503	28617	34012

recreation demands for easements in response to dispersed use, wilderness, and winter sports. The program would, after first decade, be more responsive to these needs and priority given to the status of system road to provide access to all areas larger than 5,000 acres .

i. Protection

The fire protection target organization will be driven by Level II fire analysis, and aimed at the organization that demonstrates the lowest average annual cost and net value change for fire suppression.

6. Alternative F - Market Emphasis

This Alternative describes the activities and outputs of goods and services that could be provided if the Forest emphasized market outputs--those that produce revenue for the government. High output levels in developed recreation, timber harvesting, and livestock grazing will be stressed. Restrictive stipulations on mineral activities will be relaxed to encourage higher mineral outputs. The timber harvesting levels will be limited to what can be achieved with an even-flow (non-declining) sustained yield of forest products. Less than optimum, but legally sufficient, levels of outputs for water quality, wildlife, and dispersed recreation will be achieved.

The goals of this alternative are:

- Expand the developed recreation site capacity to accommodate all anticipated users. Adhere to standards to prevent site deterioration.
- Accommodate an anticipated increase in dispersed recreation visits.
- Manage the Pine Valley Mountains, Ashdown Gorge, and the Box-Death Hollow areas to maintain wilderness qualities. Provide a standard level of maintenance.
- Increase the number of Research Natural Areas.
- Manage wildlife habitat sufficient only to support minimum viable populations of all native and desired non-native vertebrate species.
- Increase the levels of permitted livestock.
- Increase the numbers of range improvements and maintenance levels.
- Increase timber harvest levels by including steep timbered slopes and timber cultural activities.
- Treat backlog of watershed restoration needs.
- Decrease the current restrictions for mineral leasing activities. Provide prompt responses to mining industry requests.
- Provide cost efficient fire suppression.

The objectives that will be needed to meet the above listed goals and expected future conditions of the Forest are described below by major resource areas:

a. Recreation

All of the developed site capacity would be managed at full service levels.

Existing high-use recreation sites would be identified. New group sites would be constructed to accommodate 1000 PAOT. Three 100-unit sites and nine 50-unit sites would be constructed by end of planning period. This would ensure that quality developed sites would accommodate the anticipated demand for both group and family use. All of the maintenance work would be done by Forest Service employees.

Trail and road maintenance for recreation purposes would continue on only the more heavily used trails and roads and those with national significance.

The capacity of the Forest for dispersed recreation use would not be exceeded Forest-wide during the planning period. Localized popular sites would be progressively overused to the point that a quality experience is diminished. Quality recreation experience in general would diminish due to high levels of project activity. Acreage by ROS class would shift less than 30 percent from the non-motorized to the motorized classes.

Scenic values would be protected along only the most significant of the road corridors and recreation areas.

Research Natural Areas would be established at the Timbered Cinder Cone (640 acres), Table Cliff (1,235 acres), and Red Canyon (460 acres) in order to protect their unique characteristics and scientific values.

The Cultural Resources Program, as presently constructed (shared services professional, seasonal technician), would require expansion (more seasonals) under this alternative which calls for high resource outputs in developed recreation, timber harvesting and livestock grazing. Survey efforts in all three efforts would increase substantially. A release of National Forest System lands around Brian Head would require survey in tracts of "selected" land prior to the initiation of land exchanges.

b. Wilderness

Management of Ashdown Gorge and Box-Death Hollow wildernesses would emphasize primitive wilderness settings. The management of the Pine Valley Mountains Wilderness would also stress semi-primitive settings, however, the heavily used areas would require more intensive management. The Whipple Trailhead would be the only area maintained for trail access to wilderness. Ten percent of the trails would be maintained and only ten percent of the needed operation and maintenance work would be accomplished.

c. Fish and Wildlife

Habitat management would stress mitigation of land use activities to maintain viable populations. An average of 700 acres and 45 structures of habitat improvement projects would be initiated annually during the planning period. Prescribed burning for vegetative manipulation would remain at low levels. Increased aspen harvest for timber purposes would slightly enhance big game habitat. Protection of big game winter range from livestock use would not receive emphasis.

Habitat capability would not improve for many species because of the general increased resource activities. Deer numbers would probably decline somewhat on some herd units because of off-Forest development on critical range. Elk would continue to expand their range and population. Snag dependent wildlife species would steadily decline on some areas (primarily the Cedar City R.D.) because of increased access and unauthorized snag cutting. Habitat diversity would improve somewhat as emphasis in timber harvest is shifted to spruce-fir and mixed conifer and some habitat improvement is directed at the browse and aspen types. Fish habitat capability would increase slightly in streams and lakes, however, because of the gradual eutrophication of Panguitch Lake, due to causes beyond Forest Service control, overall capacity would decline until the problems are solved. It is anticipated that eutrophication problems would be solved by the fifth decade.

d. Range

Greater numbers of livestock would be permitted on the Forest. Range improvements, in the form of fences and water developments, would be built in order to increase the grazing intensity on 20,000 acres of suitable range. Grazing use on riparian areas would be moderate. Some fencing would be done to prevent over use.

The livestock ranges on the Forest currently in poor condition would remain in that condition throughout the planning period. Most areas presently in good condition would be maintained in that condition.

e. Timber

Timber harvest levels would increase by increasing the harvest of aspen, timber harvesting on slopes over 40 percent, and by applying more intensive cultural treatments on a greater number of acres. The rapid conversion of mature timber stands would be on a schedule compatible with market demand and sawmill capacity. Aerial and cable logging sales would be offered in addition to tractor logging sales so that more of the Forest's timber lands would be under intensive management.

The major portion of the available, capable and suitable Forest timber land, including steep slopes, would have been cutover by 2030 and a balance of timber age classes would be achieved by 2140. Insect and disease losses will be reduced to endemic levels by 2030. The harvest of aspen would increase if a market demand materializes.

f. Soil and Water

Intensify the coordination and mitigation of land use activities on soil and water would be intensified because of increased management activities. Two thousand two hundred forty acres of watershed restoration would be accomplished activities by 2020.

Watershed conditions will remain static or decline in limited areas. Livestock use on riparian areas will increase, resulting in some deterioration. Very small increases in water yield may occur. Water quality will decline locally, but no significant Forest-wide impairment will occur.

g. Minerals

The production of oil and gas from Forest lands is expected to remain nearly constant through the planning period. Coal production would begin on a modest scale about the second decade and gradually increase

TABLE II-14
RESOURCE OUTPUTS, ACTIVITIES, COSTS AND BENEFITS FOR ALTERNATIVE F MARKET EMPHASIS

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE						
		1	2	3	4	5	10	15
Recreation								
Developed Recreation Use	MRVD	474	651	1060	1936	2813		
Rural ROS		361	358	583	1065	1547		
Road Natural ROS		213	293	477	871	1266		
Dispersed Recreation Use	MRVD	459	781	1479	2121	2642		
Primitive ROS								
Semi-Primitive Non-Motor ROS		66	78	148	212	264		
Semi-Primitive Motorized ROS		165	195	370	530	660		
Road Natural ROS		330	391	739	1061	1321		
Rural ROS		99	117	221	318	396		
Dispersed Recreation Use (Wild.)	MRVD	8	10	17	23	28		
Primitive ROS		8	10	17	23	28		
Semi-Primitive Non-Motor ROS								
Wilderness								
Wilderness Management	MACRES	83	83	83	83	83		
Wildlife								
Structural Habitat Improvement-(Terrestrial)	STRUCTS	10	10	10	10	10		
Structural Habitat Improvement-Aquatic	STRUCTS	35	35	35	35	35		
Nonstructural Habitat Improvement-Terrestrial	ACRES	665	600	560	520	480		
Nonstructural Habitat Improvement-Aquatic	ACRES	165	150	140	130	120		
Wildlife and Fish Use	MWFUD	155	186	184	183	182		
Range								
Grazing Use (Livestock)	MAUM	117	117	117	117	117		
Wild Horses & Burros	MAUM	0.3	0.3	0.3	0.3	0.3		
Timber								
Allowable Sale Quantity	MMCF	5.9	5.9	6.0	6.0	6.0	6.0	6.0
Allowable Sale Quantity	MMBF	28.7	30.7	31.6	30.8	30.1	24.4	27.8
Sawtimber (Softwood)	MMBF	18.8	19.8	24.5	25.5	23.4	20.2	25.0
Sawtimber (Hardwood)	MMBF	9.1	9.9	6.0	4.1	5.4	3.2	1.6
Roundwood Products	MMBF	0.8	1.0	1.1	1.2	1.3	1.0	1.2
Fuelwood	MMBF	9.9	7.1	8.2	7.9	9.6	6.5	7.0
Reforestation	ACRES	1169	413	681	5051	1837	2556	566
TSI	ACRES	365	1801	3621	1092	300	1388	0
Water								
Meeting Water Quality Goals	%	98	98	98	100	100		
Increased Yield Over Natural-Forest-Wide	M AC.FT.	5.5	7.7	7.3	7.3	8.0		
Increased Yield Over Natural-Colorado River	M AC.FT.	1.4	2.0	2.1	2.4	2.9		
Protection								
Fuelbreaks and Fuel Treatment	ACRES	8052	8167	7435	6259	5947		

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE 1	2	3	4	5	10	15
Minerals								
Mineral Leases and Permits	CASES	786	839	779	774	744		
HC&D								
Human Resource Programs	EN.YEARS	20	20	20	20	20		
Lands								
Land Pur., Acq., & Exchange	CASES	2	2	3	2	3		
Soils								
Soil & Water Resource Imp.	ACRES	63	75	92	75	50		
Facilities								
Arterial and Collector Roads Construction/Reconstruction	MILES	2	1	1	1	1		
Local Roads								
Construction	MILES	17	27	24	9	5		
Reconstruction	MILES	40	27	16	26	28		
Trail Construction/Rconstruction	MILES	7	7	7	7	7		
BENEFITS M$								
Recreation								
Developed		1962	2694	4386	8014	11642		
Dispersed		7176	7741	11184	13171	15348		
Wilderness		91	105	182	253	310		
Total		9229	10540	15752	21438	27300		
Range		943	943	943	943	943		
Timber		1465	1153	373	908	741		
Wildlife		5631	5711	5623	5588	5604		
Water Yield		321	449	426	426	467		
Minerals		2914	3069	3026	2904	2813		
Other		21	21	21	21	21		
Total		20524	21886	26164	32228	37889		
RECEIPTS M$								
Recreation - Developed		184	247	395	710	1026		
Range		118	118	118	118	118		
Timber		1452	1140	360	895	728		
Minerals		14	15	14	14	13		
Other		21	21	21	21	21		
Total		1789	1541	908	1758	1906		
COSTS M$								
Timber		1707	1684	1751	2787	1484		
Roads (Appropriated)		48	24	24	24	24		
Recreation		882	963	981	2529	3529		
Wildlife		144	147	144	148	147		
Range		530	557	570	578	594		
Protection		774	765	764	765	763		
Other		2391	2557	2634	3002	3052		
Total Forest Budget		6476	6697	6868	9833	9593		
O&M		4667	4940	5005	5616	5899		
Investment		1809	1757	1863	4217	3694		
Non-Forest Service Costs (Purchaser Const. Roads)		176	224	173	90	65		
Returns to Treasury		1789	1541	908	1758	1906		

TABLE II-14a
AVERAGE ANNUAL CASH FLOWS AND NON-CASH BENEFITS *
(Thousands of 1978 Dollars Inflated to 1/1/82)

ALTERNATIVE F - MARKET EMPHASIS	DECADE 1	2	3	4	5
Timber					
Costs	1883	1908	1924	2877	1549
Benefits	1465	1153	373	908	741
Net Benefits	-418	-755	-1551	-1969	-808
Receipts	1452	1140	360	895	728
Net Receipts	-431	-768	-1564	-1982	-821
Non-Cash Benefits	13	13	13	13	13
Recreation					
Costs	882	963	981	2529	3529
Benefits	9229	10540	15752	21438	27300
Net Benefits	8347	9577	14771	18909	23771
Receipts	184	247	395	710	1026
Net Receipts	-698	-716	-586	1819	-2503
Non-Cash Benefits	9045	10293	15357	20728	26274
Wildlife					
Costs	144	147	144	148	147
Benefits	5631	5711	5623	5588	5604
Net Benefits	5487	5564	5479	5440	5457
Receipts	0	0	0	0	0
Net Receipts	-144	-147	-144	-148	-147
Non-Cash Benefits	5631	5711	5623	5588	5604
Range					
Costs	530	557	570	578	594
Benefits	943	943	943	943	943
Net Benefits	413	386	373	365	349
Receipts	118	118	118	118	118
Net Receipts	-412	-439	-452	-460	-476
Non-Cash Benefits	825	825	825	825	825
Other					
Costs	3213	3346	3422	3791	3839
Benefits	3256	3539	3473	3351	3301
Net Benefits	43	193	51	-440	-538
Receipts	35	36	35	35	34
Net Receipts	-3178	-3310	-3387	-3756	-3805
Non-Cash Benefits	3221	3503	3438	3316	3267
Total					
Costs	6652	6921	7041	9923	9658
Benefits	20524	21886	26164	32228	37889
Net Benefits	13872	14945	19123	22305	28231
Receipts	1789	1541	908	1758	1906
Net Receipts	-4863	-5380	-6133	-8165	-7752
Non-Cash Benefits	18735	20345	25256	30470	35983

until the end of the planning period. Request for leasing, permits, etc., would receive prompt responses.

h. Lands

The Land Adjustment Activities (exchange and purchase) following the Land Adjustment Program would face some delay in acting on proposals and would involve one to two cases per year. Cases in the first decade would generally be generated by out-of-service requests which will, after the first decade, change to a more aggressive position of contacting potential proponents. Increasing attention after the first decade would be directed toward cases that would protect and assist the increasing needs and demands for developed recreation. Project support for developed or potential development areas suitable for recreation, camping, and winter sports would gain priority. Releasing land in the Brian Head area or areas of similar potential for private expansion and development of services would provide high valued lands so that the exchange program could assist the purchase program in meeting the projected demands.

Rights-of-way activities following the Rights-of-Way Program would face some delay in response to need, and need would result from current resource projects during first decade. The level of activity during first decade would be two to five cases per year. Some roadways (prescriptive) and access to public lands would be blocked by private landowners during the first decade. After the first decade, there would be an increasing program with priority directed toward the demands for easements serving those projects that generate income. The program would, after the first decade, be more responsive to needs and status of system roads. Priority would be to provide adequate access to all areas larger than 5,000 acres.

i. Protection

The fire protection target organization will be driven by Level II fire Analysis, and aimed at the organization that demonstrates the lowest average annual cost and net value change for fire suppression.

7. Alternative G - 1980 RPA

This alternative describes the activities and outputs of goods and services that could be provided if the Forest achieved the targets outlined in the Intermountain Regional Guide.

The goal of this alternative is to achieve the levels of activities and outputs described on pages 3-1 to 3-40 and page 3-46 of the Regional Guide for the Intermountain Region.

The objective that would be needed to meet the goals and the expected future condition of the Forest are described below by major resource area.

a. Recreation

The developed sites would be at the full service level. Three hundred forty four units in major developed recreation site would be hardened by the year 2000 to prevent resource damage. These sites would be enlarged to provide 27 additional units by the year 2000. New developed sites would be constructed with a total of 200 units between 2010 and the end of the planning period.

The capacity in existing developed sites would exceed the RPA estimate of use until the year 2005, however, there would be some overuse in the more popular sites prior to that time. The existing sites would be hardened (artificial surfacing) to prevent site deterioration. New sites would be constructed in the more heavily used areas. Funding would not be available to maintain all of the facilities. About 50 to 60 percent of the maintenance would be done by Human Resource Programs. Site deterioration would occur in the popular sites.

The assigned targets for dispersed recreation would fall well below the anticipated use. The assigned targets would be substantially exceeded during the planning period.

The capacity for dispersed use would not be exceeded Forest-wide. However, some localized sites would be overused. ROS class sizes would shift from non-motorized to motorized as with Alternative A. The anticipated budget would be adequate to provide facilities to reduce conflicts between user groups.

Trail and road maintenance for recreation purposes on all portions of the Forest would be emphasized. About one-tenth of the trail mileage would be maintained each year.

Scenic values along major roads and recreation areas would be protected.

Research natural areas would be established at the Timbered Cinder Cone (640 acres), Table Cliff (1,235 acres), and Red Canyon (460 acres) in order to protect their unique characteristics and scientific values.

Under this alternative, regarding cultural resources, survey work will be required in the 227 new recreation units to be constructed between the year 2000 and the end of the planning period. Timber harvest levels, bolstered by aspen cuttings for wildlife habitat improvements, would require survey work to clear about 20 MMBF annually after 1990 when the accelerated Mountain Pine Beetle timber sales have been sold. Range projects (structural and non-structural), to increase grazing on 40,000 acres, will require intensive survey efforts. A release of National Forest System lands around Brian Head would require survey efforts in tracts of "selected" land prior to the initiation of land exchanges. The Cultural Resources Program, as presently constructed (shared services), would require the hiring of additional seasonals to meet the projected increase of the workload.

b. Wilderness

The Pine Valley Mountains, Ashdown Gorge, and the Box-Death Hollow areas would be managed as wilderness.

Management of the Box-Death Hollow and Ashdown Gorge area would emphasize semi-primitive wilderness settings. The management of the Pine Valley Mountains wilderness would also stress a semi-primitive setting; however, the heavily used areas would require more intensive management. Construct a trailhead at each of the areas and maintain 10 percent of existing trails.

Forest Service personnel will do eight percent of the maintenance through agency funding. The remainder will be through Human Resource Programs and Volunteers or else it will not be done.

c. Fish and Wildlife

Habitat management would stress mitigation of land use activities to maintain viable populations and increased habitat improvements to increase numbers above viable levels. an average of 1,020 acres and 60 structures of habitat improvement projects would be initiated annually during planning period. Prescribed burning for vegetative manipulation and aspen cutting for wildlife purposes would be at moderate to high levels. Protection of big game winter range and riparian areas from livestock use would not receive heavy emphasis because use on those areas will be needed to meet grazing targets.

Habitat capability would gradually improve (about ten percent) for many species because of the general improvement in habitat conditions. Deer numbers would probably decline on some herd units because of off-Forest development on critical range. Elk will continue to expand their range and population. Snag dependent wildlife species would steadily decline on some areas because of increased access and unauthorized snag cutting in spite of increased law enforcement effort. Habitat diversity would improve somewhat as emphasis in timber harvest is shifted to spruce-fir and mixed conifer and some habitat improvement is directed at the browse and aspen type. Fish Habitat capability on many streams and small lakes would increase, but overall there would be a decline as the result of eutrophication of Panguitch Lake, due to causes mostly beyond Forest Service control. It is anticipated that the eutrophication problems would be solved by the fifth decade.

The necessary coordination would be provided to improve the habitat to assist in the removal of the Utah Prairie Dog from threatened and endangered status. This includes providing the Forest's share of transplant sites (11) and cooperating in meeting the objectives of the Utah Prairie Dog Recovery Plan.

Wildlife habitat would be improved as the result of a high level of coordination with timber and other resources as well as direct habitat improvement projects. Horizontal and vertical diversity would be improved because of a higher level of timber harvest, range improvements and direct habitat improvements.

d. Range

Appropriate range improvements would be provided to increase grazing capacity on 40,000 acres of suitable range and 5000 acres of transitory range.

Additional range improvements such as fences and water developments and some small revegetation projects would be undertaken to intensify grazing use on suitable and transitory range. Grazing use on riparian areas would be moderate, but would be controlled by administration and partial fencing.

e. Timber

This alternative would complete accelerated timber sales made to minimize impacts of mountain pine beetle by 1990, then continue offering a conifer saw timber sale program of about 18 to 26 MMBF with a high percentage of that volume coming from the mixed conifer and spruce types until about 1995 or 2000. Second decade harvest volumes would decrease slightly to reflect sanitation and partial cutting of leave strips adjacent to old cuts and small, scattered stands. The harvest of aspen would increase over current levels if a market demand materializes. The RPA target of harvest volumes would not be met in the first decade.

f. Soil and Water

Aggressive action will take place to treat the soil and water restoration backlog. Treatment would be completed on both the large and small scale projects by 2005. Due primarily to the increase in grazing, poor condition range would not be improved. There would be a significant acreage in declining watershed condition at the end of the planning period. Existing management related water quality problems would have been mitigated. Before the end of the planning period. No significant change in water yield would occur.

g. Minerals

The production of oil and gas from Forest lands is expected to remain about constant through the planning period. Coal production would begin on a modest scale about the second decade and gradually increase until the end of the planning period. Request for leasing, permits, etc., would receive prompt responses.

h. Lands

The land adjustment activities (exchange and purchase) following the Land Adjustment Program would face some delay in acting on proposals and would involve one to two cases per year. Cases in the first decade would generally be generated by out-of-service requests which would, after the first decade, change to a more aggressive position of contacting potential proponents. Increasing attention after the first decade would be directed toward cases that be would protect and assist the increasing needs and demands for both developed and dispersed recreation. Securing parking and trailhead areas as well as rights-of-way for general dispersed activities, wilderness, and winter sports would gain priority. In view of the increasing dispersed use, selected lands for exchange would receive priority based on the highest value per acre so that the smallest acreage reduction occurs in relation to acreage gained. Releasing land in the Brian Head area or an area of similar potential for private expansion and development of services would provide high valued lands so that the exchange program could assist the purchase program in meeting the projected demands.

Rights-of-way activities following the Rights-of-Way Program would face some delay in response to need and need would result from current resource projects during first decade. Level of activity during first decade would be two to five cases per year. Some roadways (prescriptive) and access to public lands would be blocked by private landowners during the first decade. After the first decade, there would be an increasing program with priority directed toward the recreation demands for easements in response to dispersed use, wilderness, and winter sports. The program should be in a position to respond

TABLE II-15
RESOURCE OUTPUTS, ACTIVITIES, COSTS AND BENEFITS FOR ALTERNATIVE G 1980 RPA

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE 1	2	3	4	5	10	15
Recreation								
Developed Recreation Use	MRVD	425	455	771	615	1351		
Rural ROS		234	250	424	338	743		
Road Natural ROS		191	205	347	277	608		
Dispersed Recreation Use	MRVD	611	511	624	971	1317		
Primitive ROS								
Semi-Primitive Non-Motor ROS		87	95	88	137	186		
Semi-Primitive Motorized ROS		187	204	189	294	399		
Road Natural ROS		275	306	284	441	598		
Rural ROS		63	68	63	98	133		
Dispersed Recreation Use (Wild.)	MRVD	6	7	9	10	13		
Primitive ROS		6	7	9	10	13		
Semi-Primitive Non-Motor ROS								
Wilderness								
Wilderness Management	MACRES	83	83	83	83	83		
Wildlife								
Structural Habitat Improvement-(Terrestrial)	STRUCTS	12	13	16	16	16		
Structural Habitat Improvement-Aquatic	STRUCTS	39	51	41	51	56		
Nonstructural Habitat Improvement-Terrestrial	ACRES	680	805	803	805	806		
Nonstructural Habitat Improvement-Aquatic	ACRES	210	251	251	251	252		
Wildlife and Fish Use	MWFUD	183	204	198	204	204		
Range								
Grazing Use (Livestock)	MAUM	119	120	121	122	123		
Wild Horses & Burros	MAUM	0.3	0.3	0.3	0.3	0.3		
Timber								
Allowable Sale Quantity	MMCF	6.6	6.9	6.2	5.7	5.4	5.3	5.3
Allowable Sale Quantity	MMBF	32.8	34.8	32.1	29.1	27.2	22.1	25.6
Sawtimber (Softwood)	MMBF	25.3	18.5	24.2	25.9	23.5	17.3	24.6
Sawtimber (Hardwood)	MMBF	6.7	15.5	6.8	2.1	2.5	3.8	0
Roundwood Products	MMBF	0.8	0.8	1.1	1.1	1.2	1.0	1.0
Fuelwood	MMBF	11.0	9.1	9.0	8.8	8.5	7.5	8.0
Reforestation	ACRES	1368	344	589	5855	2210	3017	605
TSI	ACRES	3585	4034	3290	1138	900	1105	165
Water								
Meeting Water Quality Goals	%	98	98	98	100	100		
Increased Yield Over Natural-Forest-Wide	M AC.FT.	5.1	9.7	8.0	6.3	7.5		
Increased Yield Over Natural-Colorado River	M AC.FT.	1.3	3.3	2.7	1.9	2.6		
Protection								
Fuelbreaks and Fuel Treatment	ACRES	11418	7405	7426	6862	5866		

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE 1	2	3	4	5	10	15
Minerals								
Mineral Leases and Permits	CASES	730	786	726	701	691		
HC&D								
Human Resource Programs	EN.YEARS	20	20	20	20	20		
Lands								
Land Pur., Acq., & Exchange	CASES	2	2	2	2	2		
Soils								
Soil & Water Resource Imp.	ACRES	101	162	39	19	19		
Facilities								
Arterial and Collector Roads								
Construction/Reconstruction	MILES	2	1	1	1	1		
Local Roads								
Construction	MILES	24	28	15	9	5		
Reconstruction	MILES	46	25	27	30	28		
Trail Construction/Reconstruction	MILES	0	0	0	0	0		
BENEFITS M$								
Recreation								
Developed		1507	1615	2734	2180	4791		
Dispersed		4174	5857	5655	6830	8104		
Wilderness		60	66	803	95	128		
Total		5741	7538	8469	9105	13023		
Range		959	967	975	983	991		
Timber		1790	598	851	746	398		
Wildlife		5632	5969	5930	5841	5921		
Water Yield		298	566	467	368	438		
Minerals		2536	2641	2605	2487	2422		
Other		21	21	21	21	21		
Total		16977	18300	19318	19551	23214		
RECEIPTS M$								
Recreation - Developed		166	177	291	234	499		
Range		120	121	122	123	124		
Timber		1777	585	838	733	385		
Minerals		13	14	13	13	13		
Other		21	21	21	21	21		
Total		2097	918	1285	1124	1042		
COSTS M$								
Timber		2453	1813	1564	2933	1603		
Roads (Appropriated)		24	24	24	24	24		
Recreation		991	673	2352	1601	1161		
Wildlife		168	135	174	179	182		
Range		455	521	543	548	557		
Protection		692	713	683	683	683		
Other		2569	2565	2853	2829	3631		
Total Forest Budget		7352	6444	8193	8797	7841		
O&M		4620	4592	4942	5222	6093		
Investment		2732	1852	3251	3575	1748		
Non-Forest Service Costs (Purchaser Const. Roads)		245	225	133	95	67		
Returns to Treasury		2097	918	1285	1124	1042		

TABLE II-15a
AVERAGE ANNUAL CASH FLOWS AND NON-CASH BENEFITS *
(Thousands of 1978 Dollars Inflated to 1/1/82)

	DECADE				
ALTERNATIVE G - 1980 RPA	1	2	3	4	5
Timber					
Costs	2698	2038	1697	3028	1670
Benefits	1790	598	851	746	398
Net Benefits	-908	-1440	-846	-2282	-1272
Receipts	1777	585	838	733	385
Net Receipts	-921	-1453	-859	-2295	-1285
Non-Cash Benefits	13	13	13	13	13
Recreation					
Costs	991	673	2353	1601	1161
Benefits	5741	7538	8469	9105	13023
Net Benefits	4750	6865	6117	7504	11862
Receipts	166	177	291	234	499
Net Receipts	-825	-496	-2061	-1367	-662
Non-Cash Benefits	5575	7361	8178	8871	12524
Wildlife					
Costs	168	135	174	179	182
Benefits	5632	5969	5930	5841	5921
Net Benefits	5464	5834	5756	5662	5739
Receipts	0	0	0	0	0
Net Receipts	-168	-135	-174	-179	-182
Non-Cash Benefits	5632	5969	5930	5841	5921
Range					
Costs	455	521	543	548	557
Benefits	959	967	975	983	991
Net Benefits	504	446	432	435	434
Receipts	120	121	122	123	124
Net Receipts	-335	-400	-421	-425	-433
Non-Cash Benefits	839	846	853	860	867
Other					
Costs	3285	3302	3560	3536	4338
Benefits	2855	3228	3093	2876	2881
Net Benefits	-430	-74	-467	-660	-1457
Receipts	34	35	34	34	34
Net Receipts	-3251	-3267	-3526	-3502	-4304
Non-Cash Benefits	2821	3193	3059	2842	2847
Total					
Costs	7597	6669	8326	8892	7908
Benefits	16977	18300	19318	19551	23214
Net Benefits	9380	11631	10992	10659	15306
Receipts	2097	918	1285	1124	1042
Net Receipts	-5500	-5751	-7041	-7768	-6866
Non-Cash Benefits	14880	17382	18033	18427	22172

to any resource need resulting from new markets or demands. The program would after, the first decade, be more responsive to needs and status of system roads. The priority would be to provide adequate access to all areas larger than 5,000 acres.

i. Protection

The fire protection target organization will be driven by Level II Fire Analysis, and aimed at the organization that demonstrates the lowest average annual cost and net value change for fire suppression.

8. Alternative H - High Productivity

This alternative describes the activities and outputs of goods and services that could be provided if the Forest emphasized the outputs of timber and range. The outputs of other goods and services would be on a cost efficient level after meeting high timber and range targets.

The goals of this alternative are:

- Maintain the existing developed recreation site capacity with reduced services and facilities. Adhere to standards to prevent site deterioration.
- Accommodate an anticipated increase in dispersed recreation visits with the existing services and facilities.
- Manage the Pine Valley Mountains, Ashdown Gorge, and the Box-Death Hollow as wilderness areas and to a less than standard level.
- Increase the number of Research Natural Areas.
- Manage wildlife habitat to support minimum viable populations of all native and desired non-native vertebrate species and maintain existing habitat improvements.
- Increase the numbers of permitted livestock by observing only the minimum legal protection of soil and water values, wildlife values and other legal requirements i.e., Cultural Resources T&E species.
- Increase the amount of and quality of structural and nonstructural range improvement.
- Increase the timber harvest levels by adoption of the following policies:

  All tentatively suitable lands may be used for timber production purposes. The exclusions are lands already withdrawn from timber production by legislation or formal withdrawal by the Secretary or Chief. The exclusions include such areas as designated Wilderness, and Research Natural Areas.

  Utilization of timber products to include trees five inch dbh and larger.

  The state of vegetation in harvested areas, necessary before harvest of adjacent stands, is the existence of established seedlings in appropriate numbers.

  Openings created by application of even-aged management will not generally exceed 100 acres and will average about 40 acres.

  Existing and new logging technology will be applied throughout the Forest beginning in the second decade.

Aspen will be harvested in ever increasing amounts beginning in the second decade until accessible merchantable volumes are harvested.

The average rotation age for timber will be reduced to 109 years.

Sales schedules will not be constrained by nondeclining yield, and substantial reductions in sale offerings can be expected in years beyond 2030 resulting from high volume harvests in the early decades.

There may be an increase in the genetic tree improvement program, but the benefits may be delayed until improved stock reaches merchantable size.

Unit costs for many activities will be lower than for other alternatives because of:

Economics of scale.

Improved utilization and increased harvest from riparian areas.

Increased even aged management unit size.

Greater proportions of drainages can be logged using new technologies.

Greater utilization of transportation system will reduce the cost of construction and maintenance per unit of timber sold. Road maintenance costs will increase.

- Treat backlog of watershed restoration needs.
- Maintain restrictions for mineral leasing activities.
  Provide prompt responses to mining industry requests.
- Provide cost efficient fire suppression.

The objectives that will be needed to meet the above listed goals and expected future conditions of the Forest are described below by major resource areas:

9. Recreation

All existing sites would be managed at reduced service levels. Rehabilitation of existing sites would stress replacement of facilities with high maintenance cost by facilities with low maintenance costs and would stress "hardening" (artificial surfacing) of sites to reduce maintenance costs. About 30 site units would be rehabilitated per decade.

Although the demand on some of the more popular developed recreation sites presently exceeds the demand, use would increase more slowly than projected rates because of the high levels of disrupting project activities. Thus, the capacity Forest-wide would not be exceeded until about the year 2012. After this period, a continual increasing demand would cause people to camp off-Forest or on-Forest in undeveloped areas.

Trail and road maintenance for recreation purposes would continue on only the more heavily used trails and roads and those with National significance.

The capacity of the Forest for dispersed recreation use would not be exceeded Forest-wide during the planning period, however, localized popular sites will be progressively overused to the point that the quality experience is diminished. Acreage by ROS class would shift significantly from the non-motorized to the motorized classes. Conflicts between recreation users and increased grazing and timber harvesting activities would reduce the quality of the recreation experience and number of recreation users.

Research Natural Areas would be established at the Timbered Cinder Cone (640 acres), Table Cliff (1,235 acres), and Red Canyon (460 acres) in order to protect their unique characteristics and scientific values.

Scenic values along major roads and recreation areas would not be protected.

The increased levels of timber and range activities would require additional archeological surveys to be made.

b. Wilderness

The three wilderness areas would be managed for semi-primitive recreation opportunities.

c. Wildlife and Fish

Habitat management would stress mitigation of land use activities to maintain only minimum viable populations. An average of 700 acres and 70 structures of habitat improvement projects will be initiated annually during the planning period. Prescribed burning for vegetative manipulations and aspen cutting for wildlife purposes would remain at low levels. Protection of big game winter range from livestock use would not receive emphasis.

Habitat capability would remain static or decline for many species because of the general high levels of disturbance, road construction, lack of cover and high range utilization. Deer numbers would also probably decline somewhat on some herd units because of off-Forest development on critical range. Elk would not expand their range and population. Snag dependent wildlife species would steadily decline on most areas because of increased access and unauthorized snag cutting. Habitat diversity would improve somewhat as emphasis in timber harvest is shifted to spruce-fir mixed conifer and aspen types. Fish habitat capability would decrease slightly in streams and lakes and because of the gradual eutrophication of Panguitch Lake, due mostly to causes beyond Forest Service control. Overall capability would decline significantly until the lakes's problems are solved.

The necessary coordination would be provided to improve the habitat to assist in removal of the Utah prairie dog from threatened and endangered status. This includes providing the Forest's share of transplant sites (11) and cooperating in meeting the objectives of the Utah Prairie Dog Recovery Plan.

d. Range

Greater numbers of livestock would be permitted on the Forest. Additional range improvements, both structural and nonstructural, would be built in order to increase the grazing intensity on 40,000 acres of suitable range.

Transitory range in timber harvest areas would not be utilized in order to protect the timber value. Grazing use on riparian areas would be heavy.

The livestock ranges on the Forest currently in poor condition will remain in poor condition. All areas presently in good condition will not deteriorate below fair.

e. Timber

The timber harvest level would be increased by implementing the 12 policies listed under the goal statements. Implementing this alternative would allow the conversion of mature timber to young growth stands on all available, and tentatively suitable timber stands before the fifth decade. Aerial and cable logging sales would be offered in addition to tractor logging sales so that more of the Forest's timber lands would be under intensive management.

The harvest of aspen would increase over current levels in the first two decades if the market demand materializes.

f. Soil and Water

The coordination and mitigation of land use activities on soil and water values would continue due to increased management activities. Two thousand two hundred forty acres of watershed restoration activities would be completed by 2021.

Watershed conditions will remain static or decline in most areas. Use on riparian areas would increase, resulting in some deterioration. Very small increases in water yield may occur. Water quality would decline locally, but no significant Forest-wide impairment would occur.

g. Minerals

The production of oil and gas from Forest lands is expected to remain nearly constant through the planning period. Coal production would begin on a modest scale about the second decade and gradually increase until the end of the planning period. Request for leasing, permits, etc., would receive prompt responses.

h. Lands

The land adjustment activities (exchange and purchase) following the Land Adjustment Program would face some delay in acting on proposals and would involve one to two cases per year. Cases in the first decade would generally be generated by out-of-service decisions/requests which would after the first decade, change to a more aggressive position of contacting potential proponents. Priority under this alternative would be oriented toward support of the timber and range programs. Increasing attention after meeting the first priority needs would be directed toward cases that would protect and assist the increasing needs and demands for dispersed recreation. Securing parking and trailhead areas for dispersed activities, wilderness, and winter sports would gain priority. In view of the increasing dispersed use, selected lands for exchange would receive priority based on the highest value per acre so that the

TABLE II-16
RESOURCE OUTPUTS, ACTIVITIES, COSTS AND BENEFITS FOR ALTERNATIVE H HIGH PRODUCTIVITY

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE 1	2	3	4	5	10	15
Recreation								
Developed Recreation Use	MRVD	466	644	539	1275	2012		
Rural ROS		256	354	297	446	704		
Road Natural ROS		210	290	243	829	1308		
Dispersed Recreation Use	MRVD	761	1057	1694	2646	3846		
Primitive ROS								
Semi-Primitive Non-Motor ROS		111	149	240	374	508		
Semi-Primitive Motorized ROS		238	320	513	802	1088		
Road Natural ROS		357	480	770	1202	1633		
Rural ROS		55	107	171	267	617		
Dispersed Recreation Use (Wild.)	MRVD	5	6	5	13	20		
Primitive ROS		5	6	5	13	20		
Semi-Primitive Non-Motor ROS								
Wilderness								
Wilderness Management	MACRES	83	83	83	83	83		
Wildlife								
Structural Habitat Improvement-(Terrestrial)	STRUCTS	17	17	19	21	21		
Structural Habitat Improvement-Aquatic	STRUCTS	52	52	52	52	52		
Nonstructural Habitat Improvement-Terrestrial	ACRES	647	585	546	507	468		
Nonstructural Habitat Improvement-Aquatic	ACRES	183	165	154	143	132		
Wildlife and Fish Use	MWFUD	150	174	171	168	159		
Range								
Grazing Use (Livestock)	MAUM	119	124	130	136	139		
Wild Horses & Burros	MAUM	0.3	0.3	0.3	0.3	0.3		
Timber								
Allowable Sale Quantity	MMCF	6.4	4.8	4.8	6.0	7.5	1.9	5.7
Allowable Sale Quantity	MMBF	33.7	25.4	26.8	32.1	39.4	9.3	17.5
Sawtimber (Softwood)	MMBF	31.3	11.1	20.9	28.4	34.2	6.9	16.4
Sawtimber (Hardwood)	MMBF	1.7	13.2	4.8	2.6	4.0	2.2	0.1
Roundwood Products	MMBF	0.7	1.1	1.1	1.1	1.2	0.2	1.0
Fuelwood	MMBF	6.0	4.2	6.1	3.4	7.3	1.0	2.5
Reforestation	ACRES	1060	259	663	6209	3010	405	1423
TSI	ACRES	2635	3970	4147	0	0	0	0
Water								
Meeting Water Quality Goals	%	98	98	98	100	100		
Increased Yield Over Natural-Forest-Wide	M AC.FT.	4.4	9.0	7.3	6.0	7.4		
Increased Yield Over Natural-Colorado River	M AC.FT.	1.1	2.7	2.1	1.8	2.7		
Protection								
Fuelbreaks and Fuel Treatment	ACRES	5912	4401	6387	7460	8327		

OUTPUT/ACTIVITY	UNIT OF MEASURE	DECADE						
		1	2	3	4	5	10	15
Minerals								
Mineral Leases and Permits	CASES	730	786	726	701	691		
HC&D								
Human Resource Programs	EN.YEARS	20	20	20	20	20		
Lands								
Land Pur., Acq., & Exchange	CASES	2	2	2	2	2		
Soils								
Soil & Water Resource Imp.	ACRES	63	85	101	90	70		
Facilities								
Arterial and Collector Roads Construction/Reconstruction	MILES	2	1	1	1	1		
Local Roads								
Construction	MILES	31	28	13	5	5		
Reconstruction	MILES	55	25	22	26	27		
Trail Construction/Rconstruction	MILES	2	2	2	2	2		
BENEFITS M$								
Recreation								
Developed		1654	2285	1912	4522	7133		
Dispersed		5975	7087	9191	11956	15608		
Wilderness		77	103	163	254	345		
Total		7706	9475	11266	16732	23086		
Range		983	1048	1072	1096	1120		
Timber		1753	532	696	924	468		
Wildlife		5632	5713	5483	5144	4937		
Water Yield		257	525	426	350	432		
Minerals		2463	2644	2605	2486	2422		
Other		21	21	21	21	21		
Total		18815	19958	21569	26753	32486		
RECEIPTS M$								
Recreation - Developed		181	245	207	472	747		
Range		123	131	134	137	140		
Timber		1740	519	683	911	455		
Minerals		13	14	13	13	13		
Other		21	21	21	21	21		
Total		2078	930	1058	1554	1376		
COSTS M$								
Timber		1865	1018	1202	2463	1697		
Roads (Appropriated)		48	24	24	24	24		
Recreation		479	483	618	675	531		
Wildlife		176	177	132	247	191		
Range		694	756	774	573	597		
Protection		686	349	349	349	349		
Other		2539	3094	3099	3365	3706		
Total Forest Budget		6487	5901	6198	7696	7095		
O&M		4510	4564	4611	4879	5102		
Investment		1977	1337	1587	2817	1993		
Non-Forest Service Costs (Purchaser Const. Roads)		276	135	127	103	90		
Returns to Treasury		2078	930	1058	1554	1376		

TABLE II-16a
AVERAGE ANNUAL CASH FLOWS AND NON-CASH BENEFITS *
(Thousands of 1978 Dollars Inflated to 1/1/82)

ALTERNATIVE H - HIGH PRODUCTIVITY	DECADE 1	2	3	4	5
Timber					
Costs	2141	1153	1329	2566	1787
Benefits	1753	532	696	924	468
Net Benefits	-388	-621	-633	-1642	-1319
Receipts	1740	519	683	911	455
Net Receipts	-401	-634	-646	-1655	-1332
Non-Cash Benefits	13	13	13	13	13
Recreation					
Costs	479	483	618	675	531
Benefits	7706	9475	11266	16732	23086
Net Benefits	7227	8992	10648	16057	22555
Receipts	181	245	207	472	747
Net Receipts	-298	-238	-411	-203	216
Non-Cash Benefits	7525	9230	11059	16260	22339
Wildlife					
Costs	176	177	132	247	191
Benefits	5632	5713	5483	5144	4937
Net Benefits	5456	5536	5351	4897	4746
Receipts	0	0	0	0	0
Net Receipts	-176	-177	-132	-247	-191
Non-Cash Benefits	5632	5713	5483	5144	4937
Range					
Costs	694	756	774	573	597
Benefits	983	1048	1027	1096	1120
Net Benefits	289	292	298	523	523
Receipts	123	131	134	137	140
Net Receipts	-571	-625	-640	-436	-457
Non-Cash Benefits	860	917	938	959	980
Other					
Costs	3273	3467	3472	3738	4079
Benefits	2741	3190	3052	2857	2875
Net Benefits	-532	-277	-420	-881	-1204
Receipts	34	35	34	34	34
Net Receipts	-3239	-3432	-3438	-3704	-4045
Non-Cash Benefits	2707	3155	3018	2823	2841
Total					
Costs	6763	6036	6325	7799	7185
Benefits	18815	19958	21569	26753	32486
Net Benefits	12052	13922	15244	18954	25301
Receipts	2078	930	1058	1554	1376
Net Receipts	-4685	-5106	-5267	-6245	-5809
Non-Cash Benefits	16737	19028	20511	25199	31110

smallest acreage reduction occurs in relation to acreage gained. Releasing land in the Brian Head, area or an area of similar potential, would accomplish this objective and provide for private expansion and development of services.

Rights-of-way activities following the Rights-of-Way Program would face some delay in response to need, and need would result from current resource projects during first decade. As the priority programs of range and timber supported by this alternative progress, there would be a more planned program developed. Level of activity during first decade, two to five cases per year. After the first decade, there would be an increasing program. A secondary priority would be directed toward the recreation demands for easements in response to dispersed use. Some roadways (prescriptive) and access to public lands would be blocked by private landowners during the first decade and perhaps into the second while support is given to priority programs. The program would, after first decade, be more responsive to needs and status of system roads with a priority to provide adequate access to all areas over 5,000 acres.

i. Protection

The fire protection target organization will be driven by Level II Fire Analysis, and aimed at the organization that demonstrates the lowest average annual cost and net value change for fire suppression.

F. COMPARISON OF ALTERNATIVES

This section compares seven of the alternatives with the Current Program ("No Action") Alternative. The numbers used for comparison as shown in Table II-19, represent the difference in outputs, activities, benefits and costs from the Current Program Alternative. Table II-18 displays acres assigned to each prescription by alternative. Appendix B further explains the prescriptions and acreage assignments.

The purpose of Forest planning is to identify and select for implementation the alternative that most nearly maximizes net public benefits. Net public benefits are defined as the "overall long term value to the Nation of all outputs and positive effects (benefits less all associated inputs and negative effects (costs) whether they can be quantitatively valued or not, consistent with the principles of multiple use and sustained yield".

There is no mathematical formula available to define the desired alternative. Indeed, there are differences of opinion about whether the particular effects of alternatives are positive or negative. Therefore, it is necessary to separately define all the major effects of each alternative as the basis for review, judgment, and eventual selection.

The following pages summarize in tables and narrative the effects that differ significantly among alternatives. Tabular displays include:

Chapter IV, Environmental Consequences, describes in greater detail the expected effects of implementing each alternative.

1. Recreation

The capacity and service level provided at campgrounds and picnic areas would decrease, causing increasing site damage under the Current Program, Current Budget, and Constrained Budget Alternatives. Under the RPA 1980, Market, and Non-Market Alternatives, the number of facilities would increase and quality would improve.

The Constrained Budget Alternative would not provide for reconstruction of sites resulting in more site deterioration. The Current Program and Current Budget Alternatives would provide for some site reconstruction; however, it is not sufficient to keep up with projected deterioration.

The RPA 1980, Market, High Productivity and Non-Market Alternatives would provide for reconstruction of deteriorating facilities and construction of new facilities.

The composite alternative provides for sufficient construction to accommodate 50 percent of the anticipated use. The new construction would cause some temporary damage to the environment but the overall effect would be to preserve many popular dispersed areas.

The levels of cultural resource management would differ considerably between the eight alternatives. The variability of the intensity of management is attributable to the amount of support dollars provided the archeology program by the comparative levels of other management activity. For example, those alternatives that emphasize the cutting of high volumes of timber will provide more support dollars to cultural resource management than alternatives which restrict timber volumes. "Simply stated, an increased amount of support dollars means more acres surveyed and more archeological sites recorded. Recreation dollars will continue to fund minimum NFMA requirements which include the composition of a overview, the survey of lands independent of project activities, the nomination of sites to the National Register, and the protection, maintenance and interpretation of unevaluated and significant sites".

In synopsis, the market, high productivity, RPA 1980 and the composite Alternatives will provide the most intense levels of cultural resource management due to increased volumes of harvestable timber and correspondingly, more support dollars for the mitigation of direct project impacts. The Non-Market Alternative, which emphasizes dispersed recreation, will increase mainly the degree of indirect impacts to the cultural resource base. Unlike the direct impacts of the market, High Productivity, RPA 1980 and the Composite Alternatives, the indirect impacts of dispersed recreation are virtually impossible to mitigate

2. Developed Recreation-Private

Use of recreational residence, lodges, resorts, supermarkets, marinas, organizational sites and ski areas operated by private sector would be expected to increase under all alternatives. The Current Program, Constrained Budget, Current Budget, and High Productivity Alternatives, which would not provide the needed facilities in the public sector, but would increase the demand on the private sector. The Composite alternative encourages expansion in the private sector. The Forest would entertain proposals from the private sector for development and would consider each proposal on its merits at the time. Brian Head and Crystal Mountain would be allowed to develop according to approved master plans.

3. Wilderness

Composite Alternative proposes to construct or reconstruct 11 trailheads, maintain 90 percent of the trails and provide 45 man days annually to administer use, pick up trash, and maintain signing. The Non Market Alternative proposes 11 trailheads, maintaining 100 percent of the trails, and 68 man days for administration. The Current Program Alternative proposes four trailheads (two at Pine Valley and one each for Ashdown and Box-Death Hollow), maintaining 10 percent of the trails and 7 man days for administration. The Current Budget Alternative proposes to construct a trailhead at each area, maintain 3 percent of the trail system in Pine Valley Mountains; and provide for four man days of maintenance.

RPA 80 Alternative proposes to construct three trailheads, maintain ten percent of the trails and provide six man days for administration and maintenance. The Market Alternative proposes to reconstruct one trailhead at Pine Valley, maintain ten percent of the trail systems and provide seven man days for administration and maintenance. The Constrained Budget and the High Productivity Alternatives will not construct any new trailhead facilities. The High Productivity Alternative will maintain ten percent of existing trails and provide three man days of administration. The constrained Budget will not provide adequate administration.

In the Composite Alternative 50 to 60 percent of the developed site capacity will be managed at the full service level. To accomplish this 50 percent of the maintenance will need to be done with Human Resource Programs. If these programs are not available then the cost to the Government will need to be increased. New Developed site constructed at Deer Lake Trailhead, Pine Valley, Blue Springs Point, and Fish Creek Lake Trail Head will emphasize dispersed recreation adjacent to these areas. The Forest will maintain one-half of the existing trails. Some of these will be relocated to take advantage of topography and scenic attractions. Twelve trailheads will be constructed for summer use. Seventy-five percent of these will accommodate the use in Wilderness Areas. An agreement will be worked out with the State Department of Parks and Recreation for the development and maintenance of winter (cross country skiing and snowmobile) trails on the Forest. An agreement will also be worked out with the Department of Transportation to maintain parking areas at Midway, Navajo Lake, Strawberry- Uinta Flat, Pine Valley, Tom Best Spring, U12, and East Fork for winter snow play areas.

4. Wildlife

Under all alternatives, the habitat of threatened or endangered species would be managed so that present population levels are maintained or increased. The RPA 1980, Non-Market, and Composite Alternatives would provide for the greatest increases in big game populations and fish production. This is directly related to an increased level of habitat improvement. The greatest decrease in big game numbers would occur in the High Productivity and Market Emphasis

Alternatives because they provide only modest habitat improvement and create considerable habitat disturbance. Fish production under the High Productivity and Market Emphasis Alternatives would be expected to decrease because of high impacts to riparian areas. Similar decreases are seen in the Constrained Budget Alternative due to the lack of habitat improvement work.

Winter and summer range conditions would not be maintained at present levels under Current Budget, Market Emphasis, and Constrained Budget Alternatives. The Current Program Alternative would improve winter ranges to accommodate current population levels. RPA 1980, Composite, and Non-Market Alternatives would maximize the direct improvement of the wildlife range.

5. Range

Under the Current Budget and Constrained Budget Alternatives the animal unit months (AUM) would decrease gradually because of lack of maintenance to revegetated areas. Under the Non-Market Alternative, AUM's decrease due to emphasis on riparian area management and watershed protection. Under the Current Program and Composite Alternatives, AUM's remain constant. AUM's would increase under the RPA 1980, Market Emphasis, and High Productivity Alternatives.

Range conditions would improve more rapidly in the Non-Market Emphasis, Current Program, and Composite Alternatives. Under the Constrained Budget, Market and RPA 1980 Alternatives, range conditions do not improve nor do they decline.

The wild horse habitat conditions and populations are expected to remain the same under all alternatives because no management activities would be allowed to degrade either the herd or its habitat.

6. Timber

The Market Emphasis Alternative provides for harvesting 27.9, 29.7, 30.6, 29.6 and 28.7 million board feet of live sawtimber on an average annual basis for each of the respective decades in the 50-year planning period. This is the third largest harvest volume of any alternative. Timber is available for harvest on all available and tentatively suitable lands. Timber management intensity will be high, but minimum legal and management requirements for compatibility with other resources will be met. The regeneration of mature timber stands will be aggressive toward attempting to reach the objective of a balanced distribution of age classes. The aspen was included to show what could be produced under this alternative.

The Current Program and Composite Alternatives provide identical timber volumes of 25.7, 25.1, 25.2, 25.1 and 25.1 million board feet of live sawtimber on an average annual basis for each of the respective decades in the planning period. Management intensity would be slightly lower and the number of tentatively suitable acres would be slightly less than in the Market Emphasis Alternative because of additional constraints on timber harvest to meet objectives for other resource management. Aspen sawtimber harvest ranges between 2.8 and 10.3 MMBF per year.

The Constrained Budget Alternative would provide for harvesting 22.0, 23.1, 24.0, 24.1 and 22.3 million board feet of live sawtimber for each of the planning period decades. Aspen sawtimber harvest ranges between 2.9 and 7.9 MMBF per year. The budget in this alternative is 25 percent lower than in the Forest's 1982 budget. Timber products would be produced at levels lower than in all other alternatives except Non Market.

Harvest levels chosen by the FORPLAN model for the Composite and Current Program Alternatives versus the Current Budget Alternative (given required budgets to meet the harvest levels) may appear inconsistent, although a rational explanation exists. Model results showed a lower sawtimber output level for the Composite and Current Program Alternatives in the first decade even though required budgets were higher than the Current Budget Alternative which produced more sawtimber. Output levels and required budgets for decades beyond decade 1 are lower for the Composite and Current Program Alternatives that for the Current Budget Alternative. This appears consistent.

To explain the apparent inconsistency in the first decade, the assumptions of each alternative must be examined. A harvest floor based on a ten year timber program along with a nondeclining yield constraint were used in the Composite and Current Program FORPLAN runs. An objective function of maximizing Present Net Value was used (with non-declining yield) causing the model to choose the same sawtimber output as the harvest floor throughout the planning horizon. Because the Dixie FORPLAN model chooses to cut little timber when the objective function specified is to maximize present net value and no harvest floor was provided for the Current Budget Alternative FORPLAN run, an objective to maximize timber in the first decade was used. Also used were a nondeclining yield constraint and budget constraint to see how much sawtimber could be produced with the Forest's current timber budget. The model chose to harvest more aspen under the current budget than the other two alternatives to maximize sawtimber outputs in the first decade. Because unit costs are lower for aspen harvest than those for softwood sawtimber (primarily because of negligible reforestation costs and a clearcuting harvest method) the model could provide more sawtimber for less money than in the Current Program and Composite Alternatives. This was compounded by the fact that the Current Program and Composite Alternatives were constrained to precommercially thin 50,000 acres, over the five decade planning period to meet perceived silvicultural needs. This costs money now but provides no benefits until future decades. The Current Budget alternative was not forced to precommercial thin and chose a much lower level of this activity to maximize Present Net Value requiring fewer budget dollars now but forgoing future benefits. Because the Current Program and Composite Alternatives harvest more aspen beyond the first decade to meet nondeclining yield, required budgets fall, yielding apparently more consistent results beyond the first decade.

The Non-Market Alternative would emphasize management of recreation, wilderness, wildlife and other amenity values. Timber management would be modified to enhance these values. This alternative would provide for harvesting 19.0, 20.1, 20.4, 20.7 and 19.4 million board feet of live sawtimber on an average annual basis for each of the decades in the planning period. Aspen sawtimber harvest ranges between 3.5 and 8.7 MMBF per year. Production of aspen roundwood and fuelwood are the highest of any alternative. Increased aspen roundwood and fuelwood harvest would enhance big game habitat. Only tractor logging timber sales would be offered under this alternative.

The Current Budget Alternative would be very similar to the Current Program Alternative except the budget is constrained to the 1982 Forest budget. This alternative provides for harvesting 26.2, 28.0, 28.4, 28.1 and 27.4 million board feet of live sawtimber on an average annual basis for each of the planning period decades. Harvest of aspen sawtimber is greater than in the Current Program Alternative, but in the first decade the outputs are less.

The RPA 1980 Alternative has assigned targets of 30.0, 34.0, 31.0, 28.0 and 26.0 million board feet of live sawtimber annually for each of the planning period decades. Projected timber outputs from FORPLAN are 31.9, 34.0, 31.0, 28.0 and 26.0 MMBF on an average annual basis. These totals include aspen sawtimber volumes ranging form 2.1 to 15.5 MMBF per year.

The High Productivity Alternative has objectives 31.0, 37.0, 40.0, 40.0 and 46.5 million board feet on an average annual basis for the planning period decades. Objectives for timber outputs were established by the Regional Office R-4 - based on preliminary data from the Forest to be presented in an alternative that produced high levels of Market outputs. The objectives were considered unattainable. Instead of dropping the High Productivity Alternative at this point the intent of the alternative was modified to come as close to the originally established objectives as possible. Projected timber outputs form FORPLAN are 33.0, 24.3, 25.7, 31.0 and 38.2 MMBF per year. Commercial wood product utilization standards are relaxed to a minimum 5-inch diameter (8 inches in all other alternatives) so the harvest of roundwood products would be higher than in most other alternatives; .7, 1.1, 1.1 and 1.2 million board feet annually for each of the planning period decades. All tentatively suitable acres are available for timber harvest as in the Market Emphasis Alternative.

A National issue, concerning Forest Service timber sales that lose money, has been emerging. The following section has been prepared to: 1) define the below cost sales issue, 2) present rationale and explanation for such sales, and 3) display the alternatives, estimating propensity to contain below cost sales on the Dixie National Forest.

The issue of below cost timber sales centers on the contention that some Forest Service timber sales lose money. In other words some timber sales cost more to prepare, sell, and administer than they return in revenue. This can be attributed to a number of factors. First when all the direct costs (as defined in 36 CFR 219.14 (b)(2)) of timber production are included in the analysis, cost allocation must be employed since these direct costs go to produce other outputs. For example, the cost of a plan, such as this one, must be allocated to all the benefiting uses, such as timber, recreation, and wildlife, etc. This is a problem of joint cost and benefits. Other examples can be shown for road cost, fire protection, and other activities that produce multiple outputs. There is no non-arbitrary conceptually correct method of cost allocation. The goal of cost allocation as used herein is to isolate avoidable cost by program component and lump many joint costs into a single category. In this way, joint costs can be allocated to program components according to the preference of each reviewer. The problem of cost allocation is of interest in the sales below cost issue because often timber sales bear the total cost of roads and other improvements that,in reality, benefit more than just the one timber sale.

Second, road construction costs are a major component of timber sale costs. To accurately portray these costs, they need to be considered as capital expenditures and not current expenses. Doing so will allow the assignment of road costs to future timber sales and not just the current sale. This is justifiable since roads are used for many years and access several timber sales. Once the initial investment in roads is made, future timber sales become more attractive financially. Given this view, road costs should be amortized much like a factory, not as a resource that is consumed in the production of the goods and services.

Third, National Forests are not managed soley for timber production but are managed for numerous other values beyond the money they can produce. For example, in any given timber sale some prime timber may be left to provide visual quality, wildlife habitat, or stream side protection. These practices would not be followed if the primary goal was to maximize monetary returns. In addition, the Forest Service offers timber at appraised rates. When timber appraises at very low rates, policy directs that sales be offered at "base rates", which do not necessarily recover all direct costs. Further, the Forest Service offers timber on an "even-flow" basis. This policy too is not consistent with the notion of maximizing monetary returns.

Fourth, timber sales may produce more outputs than wood products, such as dispersed recreation use, enhanced water yield, and wildlife habitat improvement. Many of these outputs do not have established market values.

As the previous discussion has shown, the below cost sales issue is a complex problem. To simplify a comparison of alternatives within the context of below cost sales, a generalized process is used. This process estimates the relative frequency of below costs sales within alternatives. The Max PNV Market benchmark is used as a base to compare alternatives. This benchmark would have the smallest percentage of below cost timber sales independent of the accounting techniques used. In general, alternatives that have a higher allowable sale quantity (not including salvage, roundwood, or firewood) have a higher percentage of below cost sales. The following discussion highlights the differences in allowable sale quantity between alternatives and the Max PNV Market Benchmark and discusses these deviations and the rationale for those deviations.

Max PNV Market Benchmark. The Maximum PNV Market Benchmark has the smallest percentage of below cost timber sales independent of the accounting techniques used. For this reason the PNV Benchmark is used to compare alternatives with regard to below cost sales. In general the higher the allowable sale quantity (ASQ) the higher the percentage of below cost sales. However, even the PNV Benchmark contains some sales below cost when viewed in any accounting framework which allocates joint costs to that sale and which fails to amortize road investments over the life of the road.

The following discussion highlights for each alternative the amount of the allowable sale quantity that is greater than that quantity in the Max PNV Benchmark and provides the rationale for the higher percentage of below cost sales.

Alternative A - Current Program. The ASQ is 21.4 more than that of the Maximize PNV Market Values Benchmark (base). The ASQ of 26.4 MMBF reflects current output levels from the Forest. The amount of below cost sales would be higher than the proportion of additional volume offered in the base, especially beyond the first decade. This is due to the fact that the amount of low value aspen harvest increase multiple uses are a constraining factor, road building increase, higher logging costs on steeper slopes would occur, and lands that are more difficult to regenerate would be encountered. Additionally, timber program costs would increase in the first decade because of higher levels of timber stand improvement than any other alternative which produces no immediate value but benefits future stands. Alternative A would probably rank in the middle of the eight alternatives based on the number of below cost sales.

Alternative B - Composite. The ASQ and accompanying timber program is the same as Alternative A and will probably have the same amount of below cost sales.

Alternative C - Constrained Budget. The ASQ is 22.4 MMBF which is 17.4 MMBF greater than the base. The amount of below cost sales would probably be higher than the proportion of additional volume offered in the base because of the same reasons mentioned in Alternative A. Alternative C would, however, rank second lowest to the Non-Market Emphasis Alternative based on the number of below cost sales. This is explained by the fact that the budget constraint limits the amount of the ASQ and the number of high cost areas logged. More low value aspen is offered after the first decade than in the Non-Market Alternative.

Alternative D - Current Budget. The ASQ is 27.0 for this alternative which is 22.0 MMBF more than the base. The amount of below cost sales would probably be higher than the proportion of additional volume offered in the base for the same reasons stated in previous alternatives. The amount of below costs sales would probably be higher than Alternative A because of the higher ASQ which would require entry into more "high cost" areas.

Alternative E - Non-Market Emphasis. This alternative has an ASQ of 21.5 MMBF which is 16.5 MMBF above the ASQ of the "PNV" Benchmark. The alternative has the lowest ASQ of all alternatives and would probably rank lowest in the number of below cost sales. Although multiple use constraints for wildlife habitat, scenery and other amenity values are greater than other alternatives, they are primarily achieved on "high cost" lands where logging and regeneration costs would be higher but harvest will not take place under the alternative.

Alternative F - Market Emphasis. The ASQ in Alternative F is 23.7 MMBF more than in the Max PNV Benchmark. An ASQ of 28.7 MMBF emphasizes timber market values. This alternative along with Alternative G contain the highest probability for below cost sales of the alternatives. Reasons for this are the same as those stated for Alternative A.

Alternative G - RPA 80. The ASQ of 32.8 MMBF exceeds the base by 27.8 MMBF. This alternative responds to the 1980 RPA program and contains a high probability of below cost sales similar to Alternative F.

Alternative H - High Productivity. The ASQ of 33.7 MMBF exceeds the base by 28.7 MMBF and is similar to Alternatives F and G in probability for below cost sales to occur. The likelihood of below cost sales occurring, however, is slightly lower than Alternatives F and G, because of fewer multiple-use constraints imposed on the timber base.

7. Water and Soil

Aggressive action would be taken to treat the backlog watershed restoration acres under the Composite, Non-Market and RPA 1980 Alternatives. Under the High Productivity Market and Current Program Alternatives, moderate action would be taken to treat the backlog areas. Under the Constrained Budget and Current Budget Alternatives, the backlog acres would not be completed within the planning period.

State standards for water quality would eventually be met in all alternatives as eutrophication problems in Panguitch Lake are diminished by coordinated multi-agency restoration measures. Under the Constrained Budget Alternative, this improvement could be delayed beyond the 50 year planning horizon due to lack of funds for coordination activities and restoration measures. Stream sedimentation would be greater in those alternatives with more vigorous timber harvest and road building programs (Market Emphasis, RPA 1980, and High Productivity) and reduced levels of range administration (Constrained Budget).

In all alternatives, water yield would be increased only slightly above natural levels as a result of management activities, primarily timber harvest. However, the water yield increases in Market Emphasis, RPA 1980, and High Productivity would be somewhat greater than in the other alternatives.

The amount of riparian ecosystem would remain essentially the same in all alternatives except Market Emphasis where some loss of riparian ecosystem is anticipated. Riparian ecosystem condition would be maintained or improved in all alternatives except Constrained Budget, Current Budget, RPA 1980, and High Productivity. In these alternatives, a decline is anticipated primarily as a result of increased or less rigorously managed livestock grazing in riparian areas.

8. Minerals

The scope of locatable mineral activity allowed in an alternative is dependent upon the amount of land on which mining claims or mineral leases may be filed and environmental sensitivity. Mining claims and locatable mineral leases are restricted by administrative withdrawals and legislation, including wilderness. These restrictions would be essentially the same in all alternatives.

Environmental sensitivity encourages or discourages oil and gas activity through the requirements placed on the petroleum industry to protect other resources. The control is defined in stipulations attached to oil and gas leases and development permits. These range from standard stipulations as a minimum, to restrictive stipulations, to no surface occupancy or no lease. The mix of acres available for development varies with the emphasis of each alternative.

Development of oil and gas leases and proposals for mining claim operations will be carefully evaluated on a case-by-case basis through the environmental

TABLE II-17
COMPARISON OF MINERAL LEASING ACCESS RESTRICTIONS BY ALTERNATIVES

ACCESS RESTRICTIONS TO LEASE/PERMIT ACTIVITIES	ALTERNATIVES															
	A (M ACRES)	%	B (M ACRES)	%	C (M ACRES)	%	D (M ACRES)	%	E (M ACRES)	%	F (M ACRES)	%	G (M ACRES)	%	H (M ACRES)	%
Totally Restricted No Lease (Withdrawn for Wilderness)	83	4	83	4	83	4	83	4	83	4	83	4	83	4	83	4
Highly Restricted No Surface Occupancy	136	7	24	1	131	7	136	7	296	16	111	6	156	8	24	1
Moderately Restricted Seasonal Restrict	357	19	656	35	302	16	357	19	683	37	580	31	249	13	92	5
Low Restriction Standard Stipulation Only	1289	70	1102	60	1349	73	1289	70	803	43	1091	59	1377	75	1660	90
TOTAL	1865	100	1865	100	1865	100	1865	100	1865	100	1865	100	1865	100	1865	100

Total National Forest land (net) open to leasing is 1,864,779 acres. This has been rounded to 1865 M Acres for convenience.
Table

analysis process under all alternatives. The budget associated with each alternative will determine the Forest Service capability to process and approve mineral proposals. The Constrained Budget and Non-Market Emphasis Alternatives will restrict case analysis below the Current Program and will significantly delay mineral activity cases completed. The Current Program, Composite, and Current Budget Alternatives would provide a capability based on current workload but would delay mineral activity cases during peak years. The RPA, 1980, High Productivity and Market Alternatives would provide a capability to complete mineral cases in a timely manner.

9. Lands

Land Adjustment activities under the various alternatives have been covered in the discussion of each alternative.

Rights-of-way activities under the various alternatives have been covered in the discussion of each alternative.

Occupancy Trespass, Title Claims, and Small Tracts Act: these programs would vary with funding and landline activities. The programs may be characterized as having an increasing backlog of potential cases during the first decade. The program during this period would be responsive to the urgency to limit resource damage and general sensitivity of cases, with all cases facing some delay in action. With increased funding, increased accomplishment would take place; however, new cases would continue to accumulate faster than case work as long as an aggressive landline program continues. The exception to this general trend would be the Constrained and Current Budget Alternatives. Under these two alternatives the program would degenerate to record keeping with no option for taking corrective action. The Forest, under these two alternatives, would lose the option of pursuing management objectives through these programs.

Special Uses: the number of on-going and new permits would not generally be a reflection of the alternative. This program would reflect funding in terms of delay time in permit work, frequency and type of permits inspected, and fee determination. With increased funding, the program would gradually increase in it's ability to reduce these shortcomings. Special projects and demands on the program would be a problem in the first decade. New fee calculation procedures may be undertaken on an extensive basis in the first decade with more intensive appraisals occurring after the first decade. The exception to this general trend would be the Constrained, Current Budget and Market Alternatives. The Constrained and Current Budget Alternatives would have the program drop away from an active position to the point that the only accomplishment would be the most important paper work and inspections. No new composite areas or new fee determinations could be undertaken with the Constrained and Current Budget Alternative. The Market Alternative leads in the opposite direction with full funding of this program. More intensive appraisals with increased funding would provide a full return on the use of Federal Lands.

The local interchange program (exchange of land with other agencies) would consider those lands that, after study, would be more efficiently managed by another agency. This is a conceptual program for increased management efficiency, which will be carried out at the local level. The program would be a reflection of not only our funding, but those of such agencies as may become involved. Lands difficult to manage due to location and/or restricted in use due to management restraints serving a cooperating agency's needs would be of first consideration. Selection of lands would also relate to the objectives and needs of individual alternatives. The exception to this general trend for this program would be the Constrained and Current Budget Alternatives. Under these alternatives the interchange program would probably not progress beyond the initial study stage due to a lack of funding.

Utility corridors have been identified and are the same in all alternatives.

The Forest does not expect any requests for new transportation corridors or for major changes in existing highways, so highway corridors remain unchanged in all alternatives.

Acquisitions of rights-of-way for use in management of the timber resource varies among alternatives, depending on the number of miles of new road required. Differences among the alternatives are not expected to be significant.

Evaluation of existing mineral withdrawals would likely result in some recessions. Withdrawal review is required by law and would occur in all alternatives.

The RPA 1980, Market Emphasis, and Composite Alternatives would prescribe land line survey and posting adequate to meet resource activity needs and prevent most occupancy trespass. In contrast, the Current Budget, Non-Market, and Current Program Alternatives provide land line survey and posting adequate for resource activities, but not to prevent occupancy trespass. The Constrained Budget Alternative would not meet the needs of resource activities and would not prevent occupancy trespass.

Because of increased interest in development of hydroelectric power, the Forest expects applications for development of small hydro-power facilities on some perennial streams.

10. Protection

The fire protection target organization will be driven by Level II Fire Analysis, and aimed at the organization that demonstrates the lowest average annual cost and net value change for fire suppression.

The Level II analysis curve demonstrates the predicted effects in terms of suppression costs and resource damages for various fire budget levels and corresponding initial attack organization. The curve is useful in defining the most cost effective initial attack organization based on average annual wildfire expectations, as well as estimating the costs of budget and organization options above and below the curve's lowest point.

Most fuels treatment would result from other resource activities and utilization primarily through the fuelwood program. The amount accomplished would be directly related to the volume of timber harvested and the acres made accessible by roads for timber sales.

11. Facilities

Building and administrative site repair and maintenance would be limited to health, safety, and energy items in the Current and Constrained Budget Alternatives. The other alternatives would provide preventive maintenance, replacement, and repair programs.

The collector road system needed to meet the thrust of the RPA 1980, Market Emphasis, High Productivity, Composite, and Current Program Alternatives would be in place before year 2000. The road construction and reconstruction program would be minimal in the Current and Constrained Budget Alternatives.

Local road construction and reconstruction would increase in proportion to timber harvest levels in the alternatives.

The program to replace existing substandard bridges is similar for all alternatives. Bridge maintenance and repair will be completed on structures unsafe or no longer useable in the Current Budget and Constrained Budget Alternatives. The RPA 1980, Market Emphasis, Non-Market, Composite, and Current Program Alternatives include accelerated bridge maintenance and repair programs.

Under Current Budget, Current Program and Composite Alternatives, roads will be maintained on a priority basis depending on use. Arterial and collector roads will be minimally maintained to handle traffic volumes. Local roads will be maintained on an as-needed basis. Signing of roads will not be kept up to date.

Under the Constrained Budget Alternative, only roads absolutely essential for Forest activities would be maintained. These roads would be only minimally maintained. Signing would be provided for the safety of the users.

The Non-Market Emphasis, Market Emphasis with Timber Departure, 1980 RPA Program, and High Productivity Alternatives would develop and maintain an efficient, safe, and environmentally sound arterial and collector road system, local roads would be maintained as needed.

The comparison of the management emphases for each alternative is displayed in Table II-18. The relative amounts of land assigned to Management Area prescriptions provides a measure of management emphasis.

TABLE II-18
ACREAGE ASSIGNMENT BY MANAGEMENT AREA PRESCRIPTION FOR EACH ALTERNATIVE
(M Acres)

Mgmt. Area Presc.	Emphasis	Alternatives							
		A	B	C	D	E	F	G	H
1A	National Forest Recreation Sites.	17.4	19.4	14.7	17.4	4.6	5.0	11.2	13.7
1B	Existing winter sports sites.	3.8	3.8	3.3	3.8	2.2	3.8	3.4	3.7
2A	Semi-primitive recreation opportunities.	88.8	222.3	73.6	88.8	391.0	71.0	85.0	46.9
2B	Roaded natural & rural recreation opportunities. Maintained or improved visual quality on major travel routes.	114.5	131.7	15.6	114.5	224.8	20.9	14.1	0
4A	Fish habitat increase water quality & stream channel enhancement for fish habitat.	3.8	1.1	1.1	3.8	1.4	0.1	1.4	1.1
4B	Wildlife habitat management for one or more management indicator species. Livestock grazing will be compatible with wildlife habitat management.	14.3	36.7	0	14.3	432.4	0	15.5	0
4C	Wildlife habitat improvement. Vegetation treatment in hardwood and shrub dominated land. Livestock grazing will be compatible with wildlife habitat management.	0	72.9	0	0	0	0	0	0
4D	Wildlife habitat management. Livestock grazing will be compatible with wildlife habitat management. Clearcut aspen only.	0	10.5	0	0	45.0	0	4.1	0
5A	Big game winter range in non-forest areas. Travel management prevents unacceptable stress. Livestock grazing managed to favor wildlife habitat.	112.8	313.6	31.4	112.8	214.6	40.9	113.2	40.9

5B	**Big game winter range in forest areas. Travel management prevents unacceptable stress. Vegetation treatment will enhance plant and animal diversity. Livestock grazing managed to favor wildlife habitat.**	0	23.6	0	0	0	0	0	0
6A	Livestock grazing. Improve forage composition. Vegetation treatment in mountain grass, meadow, and shrub; oakbrush; and aspen types.	339.9	276.6	465.6	339.9	59.3	939.5	480.0	848.8
7A	Intensive timber management. Timber harvest in aspen, spruce-fir, ponderosa pine and mixed conifer types. Slopes less than 40 percent.	271.2	270.4	200.4	271.2	130.4	373.7	305.4	590.8
8A	Semi-primitive wilderness setting. Moderate level of solitude. Moderate opportunity for challenge, risk, and self-reliance.	83.0	83.0	83.0	83.0	83.0	83.0	83.0	83.0
8A1	Antone Bench Exclusion	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
8A2	Other Box-Death Hollow Exclusions.	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
9A	Riparian area management. Limits utilization of resources. One hundred feet from perennial stream edges, high water marks of lakes and wetlands.	18.3	7.6	1.1	18.3	11.1	0	6.3	0
9B	Intensive riparian area management.	1.10	1.6	0.08	0.10	11.1	0.5	0	0
10A	Research Natural Areas.	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
10E	Municipal Watersheds.	24.0	9.1	19.4	24.9	21.5	9.7	23.8	8.8
1.	General Forest Direction	785.1	393.0	969.8	785.1	249.3	330.1	734.6	239.7

TOTAL - 1,883.676 M ACRES

The following Table II-19 present a comparison of the outputs, activities, costs, and receipts for the Benchmarks and alternatives. All comparisons are made with the output, activity or cost of the first decade of the Current Program Alternative.

TABLE II-19
RESOURCE OUTPUTS, ACTIVITIES, COSTS, AND BENEFITS COMPARED TO THE FIRST DECADE OF THE CURRENT PROGRAM ALTERNATIVE BY BENCHMARKS AND ALTERNATIVES*

OUTPUT/ACTIVITY	UNITS	CURRENT PROGRAM FIRST DECADE	ALT. A CURRENT PROGRAM	BENCHMARKS					ALTERNATIVES						
				MINIMUM LEVEL	MAXIMUM TIMBER	MAXIMUM RANGE	PNV MARKET	PNV ASSIGN.	(B) COMPO-SITE	(C) CONSTR. BUDGET	(D) CURRENT BUDGET	(E) NON-MARKET	(F) MARKET	(G) 1980 RPA	(H) HIGH PROD
Recreation															
Developed Rec. Use (inc. VIS) (R)	MRVD														
Decade 1		186	0	-94	+120	+20	+75	+75	+75	-38	+70	+57	+175	+48	+70
2			+70	-94	+243	+243	+172	+172	+172	-34	+72	+103	+172	+64	+168
3			+197	-94	+253	+126	+397	+397	+397	-17	+93	+221	+397	+238	+111
4			+324	-94	+253	+126	+879	+723	+723	+13	+103	+221	+879	+152	+260
5			+618	-94	+253	+126	+1361	+919	+919	+43	+113	+372	+1361	+557	+518
Developed Rec. Use (inc. VIS) (RN)	MRVD														
Decade 1		280	0	-280	-58	-58	-67	-67	-67	-159	-70	-81	-67	-89	-70
2			+105	-280	+31	-56	+18	+13	+13	-155	-71	-44	+13	-75	+10
3			+295	-280	+31	-56	+197	+197	+197	-142	-52	+53	+197	+67	-37
4			+485	-280	+38	-54	+591	+463	+463	-117	-44	+150	+591	-3	+549
5			+22	-280	+38	-54	+986	+563	+524	-93	-36	+176	+986	+328	+1028
Dispersed Rec. Use (SPNM)	MRVD														
Decade 1		110	0	+190	+26	-69	-44	+4	+13	-7	+4	+10	-44	-23	+1
2			+39	+220	+56	-55	-32	+41	+82	+49	+41	+78	-32	-15	+39
3			+129	+250	+93	-25	+38	+132	+148	+80	+132	+145	+38	-22	+130
4			+263	+250	+137	+21	+102	+266	+302	+173	+266	+299	+102	+27	+264
5			+398	+250	+192	+92	+154	+400	+456	+265	+400	+453	+154	+76	+398
Dispersed Rec. Use (SPM)	MRVD														
Decade 1		236	0	-236	+54	-153	-71	+8	-31	-15	+8	+83	-71	-49	+2
2			+84	-236	+121	-125	-41	+88	+84	+105	+88	+266	-41	-32	+84
3			+277	-236	+199	-66	+134	+282	+194	+170	+282	+444	+134	-47	+277
4			+564	-236	+294	+26	+294	+569	+451	+368	+569	+855	+294	+58	+566
5			+852	-236	+410	+167	+424	+856	+708	+567	+856	+1266	+424	+153	+852
Dispersed Rec. Use Other (RN)	MRVD														
Decade 1		355	0	-355	+80	+224	-25	+11	+14	+13	+11	-76	-25	-80	+2
2			+125	-355	+180	+419	+36	+131	+220	+213	+131	+85	+36	-49	+125
3			+414	-355	+297	+838	+384	+421	+420	+322	+421	+240	+384	-71	+415
4			+846	-355	+440	+1477	+706	+852	+882	+652	+852	+600	+706	+86	+847
5			+1279	-355	+615	+2468	+966	+1283	+1345	+984	+1283	+959	+966	+243	+1278

OUTPUT/ACTIVITY	UNITS	CURRENT PROGRAM FIRST DECADE	ALT. A CURRENT PROGRAM	BENCHMARKS					ALTERNATIVES						
				MINIMUM LEVEL	MAXIMUM TIMBER	MAXIMUM RANGE	PNV MARKET	PNV ASSIGN.	(B) COMPO-SITE	(C) CONSTR. BUDGET	(D) CURRENT BUDGET	(E) NON-MARKET	(F) MARKET	(G) 1980 RPA	(H) HIGH PROD
Dispersed Rec. Use Other (R)	MRVD														
Decade 1		79	0	-79	+3	+45	+20	+2	+27	-40	+2	+1	+20	-16	-24
2			+28	-79	+40	+87	+38	+29	+87	-22	+30	+47	+38	-11	+28
3			+92	-79	+65	+176	+142	+94	+145	-11	+94	+91	+142	-16	+92
4			+188	-79	+98	+314	+239	+183	+276	+22	+190	+194	+239	+19	+188
5			+284	-79	+137	+526	+317	+285	+410	+55	+285	+297	+317	+54	+538
Wilderness															
Wilderness Mgt.	M Acres														
Decade 1		83	0	0	0	0	0	0	0	0	0	0	0	0	0
2			0	0	0	0	0	0	0	0	0	0	0	0	0
3			0	0	0	0	0	0	0	0	0	0	0	0	0
4			0	0	0	0	0	0	0	0	0	0	0	0	0
5			0	0	0	0	0	0	0	0	0	0	0	0	0
Dispersed Rec. Use Wilderness (P)	MRVD														
Decade 1		8	0	+47	+35	-4	0	-4	0	0	0	0	0	-2	-3
2			+3	+67	+35	-4	+2	-1	+5	+4	+3	+5	+2	-1	-2
3			+9	+82	+35	-4	+8	+2	+9	+6	+9	+9	+9	+1	-3
4			+19	+82	+35	-4	+15	+9	+19	+12	+19	+19	+15	+2	+5
5			+28	+82	+35	-4	+20	+17	+30	+19	+24	+30	+20	+5	+12
Wildlife															
Structural Habitat Terrestrial	Struc.														
Decade 1		10	0	-10	-1	+4	0	+5	+9	-8	0	+1	0	+2	+7
2			+2	-10	0	+2	0	+16	+10	-8	0	+6	0	+3	+7
3			+2	-10	0	-1	0	+22	+11	-8	-2	+7	0	+6	+9
4			+2	-10	0	-2	0	+22	+12	-8	-4	+7	0	+6	+11
5			+2	-10	+1	-4	0	+23	+13	-8	-5	+8	0	+6	+11
Nonstructural Habitat Imp. Terrestrial	Acres														
Decade 1		850	0	-850	-220	-450	-850	+1280	+1190	-800	-210	+780	-185	-170	-203
2			-10	-850	-192	-450	-850	+1700	+1242	-800	-230	+1050	-250	-45	-265
3			-10	-850	-154	-450	-850	+1802	+1295	-800	-250	+1052	-290	-47	-304
4			-30	-850	-229	-450	-850	+1802	+1352	-800	-290	+1052	-330	-45	-343
5			-30	-850	-229	-450	-850	+1802	+1405	-800	-370	+1052	-370	-44	-382

OUTPUT/ACTIVITY	UNITS	CURRENT PROGRAM FIRST DECADE	ALT. A CURRENT PROGRAM	BENCHMARKS					ALTERNATIVES						
				MINIMUM LEVEL	MAXIMUM TIMBER	MAXIMUM RANGE	PNV MARKET	PNV ASSIGN.	(B) COMPO-SITE	(C) CONSTR. BUDGET	(D) CURRENT BUDGET	(E) NON-MARKET	(F) MARKET	(G) 1980 RPA	(H HIG PRO
Structural Habitat Imp. Aquatic	Struc.														
Decade 1		20	0	-20	0	-13	-20	+19	+115	-15	0	+19	+15	+19	+32
2			+5	-20	+9	-13	-20	+24	+122	-15	0	+24	+15	+31	+32
3			+5	-20	-1	-13	-20	+13	+125	-15	0	+13	+15	+21	+32
4			+5	-20	-9	-13	-20	-5	+128	-15	0	+10	+15	+31	+32
5			+5	-20	-9	-13	-20	-5	+133	-15	0	+10	+15	+36	+32
Nonstructural Hab. Imp. Aquatic	Acres														
Decade 1		100	0	-100	+110	-25	-100	+130	+400	-100	+60	+130	+65	+110	+83
2			+10	-100	+132	-36	-100	+130	+410	-100	+55	+130	+50	+151	+65
3			+10	-100	+120	-29	-100	+45	+420	-100	+50	+45	+40	+151	+54
4			+30	-100	+107	-36	-100	+50	+430	-100	+40	+35	+30	+151	+43
5			+30	-100	+107	-42	-100	+50	+440	-100	+20	+20	+20	+152	+32
Wildlife and Fish Use	MWFUD														
Decade 1		171	0	0	-1	-6	0	-1	+9	-32	+4	+12	-16	+12	-21
2			+12	-17	+1	-59	-17	+17	+31	-18	+1	+40	+15	+33	+3
3			+11	-33	-3	-87	-33	+14	+26	-25	-3	+33	+13	+27	0
4			+9	-46	-4	-104	-46	+13	+31	-26	-5	+40	+12	+33	-3
5			+8	-45	-4	-113	-45	+14	+31	-26	-7	+40	+11	+33	-12
Range															
Grazing Use (livestock)	M AUM														
Decade 1		115	0	-115	+2	+4	-5	-5	0	-5	0	-25	+2	+4	+7
2			0	-115	+2	+9	-8	-8	0	-8	0	-25	+2	+5	+15
3			0	-115	+2	+15	-10	-10	0	-10	0	-25	+2	+6	+18
4			0	-115	+2	+22	-12	-12	0	-12	0	-25	+2	+7	+21
5			0	-115	+2	+28	-15	-15	0	-15	0	-25	+2	+8	+24
Wild Horses and Burros	M AUM														
Decade 1		0.3	0	0	0	0	0	0	0	0	0	0	0	0	0
2			0	0	0	0	0	0	0	0	0	0	0	0	0
3			0	0	0	0	0	0	0	0	0	0	0	0	0
4			0	0	0	0	0	0	0	0	0	0	0	0	0
5			0	0	0	0	0	0	0	0	0	0	0	0	0

				BENCHMARKS					ALTERNATIVES						
OUTPUT/ACTIVITY	UNITS	CURRENT PROGRAM FIRST DECADE	ALT. A CURRENT PROGRAM	MINIMUM LEVEL	MAXIMUM TIMBER	MAXIMUM RANGE	PNV MARKET	PNV ASSIGN.	(B) COMPO-SITE	(C) CONSTR. BUDGET	(D) CURRENT BUDGET	(E) NON-MARKET	(F) MARKET	(G) 1980 RPA	(H) HIGH PROD
Timber															
Allowable Sale Qnty	MMCF														
Decade 1		5.1	0	-5.1	+1.0	-1.1	-4.0	-4.0	0	-0.6	+0.5	-0.4	+0.8	+1.5	+1.3
2			+0.1	-5.1	+1.1	-1.9	-4.0	-4.0	+0.1	-0.6	+0.5	+0.1	+0.8	+1.8	-0.3
3			+0.2	-5.1	+1.1	-1.7	-2.2	-2.2	+0.2	-0.6	+0.5	+0.2	+0.9	+1.1	-0.3
4			+0.2	-5.1	+1.1	+0.5	-2.2	-2.2	+0.2	-0.6	+0.5	+0.2	+0.9	+0.6	+0.9
5			+0.3	-5.1	+1.2	-2.4	-1.9	-1.9	+0.3	-0.6	+0.5	+0.2	+0.9	+0.3	+2.4
10			+0.3	-5.1	+1.2	-2.0	-1.9	-1.9	+0.3	-0.6	+0.5	+0.2	+0.9	+0.2	+3.2
15			+0.3	-5.1	+1.2	-0.8	-1.9	-1.9	+0.3	-0.6	+0.5	+0.2	+0.9	+0.2	+0.6
Allowable Sale Qnty	MMBF														
Decade 1		26.4	0	-26.4	+4.8	-6.4	-21.4	-21.4	0	-4.0	+0.6	+4.9	+2.3	+6.4	+7.3
2			-0.4	-26.4	+4.9	-9.9	-21.1	-21.1	-0.4	-2.9	+2.0	-2.4	+4.3	+8.4	-1.0
3			-0.1	-26.4	+7.6	-9.3	-9.4	-9.4	-0.1	-2.0	+2.8	-1.9	+5.2	+5.7	+0.4
4			0	-26.4	+5.1	-2.7	-12.1	-12.1	0	-1.9	+2.5	-1.5	+4.4	+2.7	+5.7
5			0	-26.4	+4.8	-11.9	-11.6	-11.6	0	-3.6	+1.8	-2.7	+3.7	+0.8	+13.0
10			-3.9	-26.4	-0.2	-12.7	-11.0	-11.0	-3.9	-7.3	-3.4	-5.2	-2.0	-4.3	-17.1
15			-2.0	-26.4	+2.7	-4.3	-14.3	-14.3	-2.0	-2.0	+1.0	-2.8	+1.4	-0.8	-8.9
Sawtimber (softwood)	MMBF														
Decade 1		22.9	0	-22.9	+4.8	-10.7	-18.2	-18.2	0	-8.8	-3.2	-7.4	-4.1	+2.4	+8.4
2			-7.2	-22.9	-8.6	-12.6	-18.4	-18.4	-7.2	-7.6	-5.5	-11.5	-3.1	-4.4	-11.8
3			-8.0	-22.9	+8.2	-12.4	-6.3	-6.3	-8.0	-3.9	+0.9	-9.2	+1.6	+1.3	-2.0
4			-5.5	-22.9	-1.7	-6.0	-10.9	-10.9	-5.5	-1.7	-2.0	-8.4	+2.6	+3.0	+5.5
5			-1.6	-22.9	+1.4	-9.9	-13.2	-13.2	-1.6	-6.8	+0.3	-7.4	+0.5	+0.6	+11.3
10			-3.4	-22.9	-2.9	-10.1	-10.3	-10.3	=3.4	-8.0	-4.9	-11.3	-2.7	-5.6	-16.0
15			-2.4	-22.9	-0.7	-4.5	-11.9	-11.9	-2.4	-0.8	-2.6	-11.2	+2.1	+1.7	-6.5
Sawtimber (hardwood)	MMBF														
Decade 1		2.8	0	-2.8	-0.1	+4.2	-2.8	-2.8	0	+5.1	+3.7	+0.7	+6.3	+3.9	-1.1
2			+6.6	-2.8	+13.2	+3.0	-2.3	-2.3	+6.6	+6.0	+7.8	+5.9	+7.1	+12.7	+10.4
3			+7.5	-2.8	-1.0	+3.0	-2.8	-2.8	+7.5	2.2	+1.8	+3.9	+3.2	+4.0	+2.0
4			+5.0	-2.8	+6.3	+3.2	-0.9	-0.9	+5.0	+0.1	+4.4	+3.4	+1.3	-0.7	-0.2
5			+0.9	-2.8	+2.8	-2.1	+1.9	+1.9	+0.9	+3.4	+1.4	+1.1	+2.6	-0.3	-1.2
10			-0.9	-2.8	+2.4	-2.7	-0.4	-0.4	-0.9	+1.0	+1.4	+2.8	+0.4	+1.0	-0.6
15			-0.1	-2.8	+2.9	-0.1	-2.0	-2.0	-0.1	-1.8	+3.3	+5.1	-1.2	-2.8	-2.7
Roundwood Products	MMBF														
Decade 1		0.7	0	-0.7	+0.1	+0.1	-0.4	-0.4	0	-0.3	+0.1	+1.8	+0.1	+0.1	0
2			+0.2	-0.7	+0.3	-0.3	-0.4	-0.4	+0.2	-0.3	-0.3	+3.2	+0.3	+0.1	+0.4
3			+0.4	-0.7	+0.4	+0.1	-0.3	-0.3	+0.4	-0.3	+0.1	+3.4	+0.4	+0.4	+0.4
4			+0.5	-0.7	+0.5	+0.1	-0.3	-0.3	+0.5	-0.3	+0.1	+3.5	+0.5	+0.4	+0.4
5			+0.7	-0.7	+0.6	+0.1	-0.3	-0.3	+0.7	-0.2	+0.1	+3.6	+0.6	+0.5	+0.5
10			+0.4	-0.7	+0.3	+0.1	-0.3	-0.3	+0.4	-0.3	+0.1	+3.3	+0.3	+0.3	-0.5
15			+0.5	-0.7	+0.5	+0.3	-0.4	-0.4	0.5	-0.3	+0.3	+3.3	+0.5	+0.3	+0.3

				BENCHMARKS					ALTERNATIVES						
OUTPUT/ACTIVITY	UNITS	CURRENT PROGRAM FIRST DECADE	ALT. A CURRENT PROGRAM	MINIMUM LEVEL	MAXIMUM TIMBER	MAXIMUM RANGE	PNV MARKET	PNV ASSIGN.	(B) COMPO-SITE	(C) CONSTR. BUDGET	(D) CURRENT BUDGET	(E) NON-MARKET	(F) MARKET	(G) 1980 RPA	(H) HIGH PROD
Fuelwood	MMBF														
Decade 1		10.7	0	-10.7	-3.2	-0.6	-9.1	-9.1	0	-3.1	-0.6	-3.2	-0.8	+0.3	-4.7
2			-2.3	-10.7	-6.0	-3.5	-9.1	-9.1	-2.3	-5.2	-3.5	-2.3	-3.6	-1.6	-6.5
3			-2.2	-10.7	-5.0	-3.9	-5.2	-5.2	-2.2	-5.5	-3.9	-2.3	-2.5	-1.7	-4.6
4			-2.7	-10.7	-3.2	-3.0	-5.5	-5.5	-2.7	-4.9	-3.0	-2.3	-2.8	-1.9	-7.3
5			-1.3	-10.7	-1.5	-2.0	-7.0	-7.0	-1.3	-4.1	-2.0	-2.3	-1.1	-2.2	-3.4
10			-2.7	-10.7	-3.2	-3.2	-7.2	-7.2	-2.7	-6.2	-3.2	-2.3	-4.2	-3.2	-9.7
15			-2.6	-10.7	-2.2	-2.2	-7.7	-7.7	-2.6	-5.2	-2.2	-2.3	-3.7	-2.7	-8.2
Reforestation	Acres														
Decade 1		1588	0	0	-389	-1435	-1562	-1562	0	-1273	-758	-1002	-419	+1997	-528
2			-1186	0	-1185	-1429	-1531	-1531	-1186	-913	-1112	-1243	-1175	+2446	-1329
3			-1134	0	-749	-1445	-1419	-1419	-1134	-1210	-868	-907	-907	+1702	-925
4			-1765	0	+2566	-1282	-1481	-1481	+1765	-496	+1053	+89	+3463	-450	+4621
5			+56	0	+611	-974	-1296	-1296	+58	+281	+812	+1226	+249	-688	+1422
10			-206	0	+1094	+1243	+366	+366	-206	+303	+941	-899	+1968	-483	-1183
15			-667	0	-780	-684	-1470	-1470	-667	+511	-382	-859	-1022	-1423	-165
TSI	Acres														
Decade 1		5000	0	0	-2371	-3464	-5000	-5000	0	-4553	-4020	-4963	-4635	-1415	-2365
2			-4946	0	-4390	-4926	-4500	-4500	-4946	-4043	-3444	-4355	-3199	-966	-1030
3			-3231	0	-3152	-4706	-5000	-5000	-3231	-897	-1199	-2829	-1379	-1710	-853
4			-4372	0	-4462	-3893	-4955	-4955	-4372	-3391	-3749	-4373	-3908	-3862	-5000
5			-4750	0	-5000	-4550	-3938	-3938	-4750	-4407	-4736	-4774	-4700	-4100	-5000
10			-4881	0	-3265	-5000	-5000	-5000	-4881	-5000	-4450	-3283	-3612	-3895	-5000
15			-5000	0	-4772	-2480	-3656	-3656	-5000	-5000	-5000	-5000	-5000	-4835	-5000
Water															
Meeting Water Quality Goals	Percent														
Decade 1		98	0	0	0	0	0	0	0	0	0	0	0	0	0
2			0	0	0	0	0	0	0	0	0	0	0	0	0
3			0	0	0	0	0	0	0	0	0	0	0	0	0
4			+2	0	+2	+2	0	+2	+2	0	+2	+2	+2	+2	+2
5			+2	0	+2	+2	0	+2	+2	0	+2	+2	+2	+2	+2
Increased Water Yield Over Natural Forest-Wide	M Ac. Ft.														
Decade 1		4.3	0	-4.3	-0.8	-0.2	-1.7	-1.7	0	+0.3	+0.5	-0.4	+1.2	+0.8	+0.1
2			+4.0	-4.3	+3.6	-0.2	-2.7	-2.7	+4.0	+1.7	+3.3	+1.4	+3.4	+5.4	+4.7
3			+3.8	-4.3	+3.2	-1.0	-3.4	-3.4	+3.8	+0.9	+2.6	+1.3	+3.0	+3.7	+3.0
4			+2.4	-4.3	+3.0	-1.1	-3.3	-3.3	-2.4	+0.9	+2.7	+1.4	+3.0	+2.0	+1.7
5			+1.7	-4.3	+4.0	-1.3	-2.8	-2.8	+1.7	+2.1	+2.7	+1.1	+3.7	+3.2	+3.1

				BENCHMARKS					ALTERNATIVES						
OUTPUT/ACTIVITY	UNITS	CURRENT PROGRAM FIRST DECADE	ALT. A CURRENT PROGRAM	MINIMUM LEVEL	MAXIMUM TIMBER	MAXIMUM RANGE	PNV MARKET	PNV ASSIGN.	(B) COMPO-SITE	(C) CONSTR. BUDGET	(D) CURRENT BUDGET	(E) NON-MARKET	(F) MARKET	(G) 1980 RPA	(H) HIGH PROD
Increased Water Yield Over Natural Colorado River	M Ac. Ft.														
Decade 1		1.2	0	-1.2	-0.5	-0.1	-0.7	-0.7	0	0	-0.1	-0.3	+0.2	+0.1	-0.1
2			+1.5	-1.2	+1.0	+0.2	-0.9	-0.9	+1.5	+0.4	+0.8	+0.2	+0.8	+2.1	+1.5
3			+1.4	-1.2	+1.1	0	-0.9	-0.9	+1.4	+0.1	+0.8	+0.2	+0.9	+1.5	+0.9
4			+0.9	-1.2	+1.3	+0.2	-0.6	-0.6	+0.9	+0.4	+1.0	+0.4	+1.2	+0.7	+0.6
5			+0.7	-1.2	+1.4	+0.1	-0.4	-0.4	+0.7	+1.0	+1.3	+0.7	+1.7	+1.4	+1.5
Fuelbreaks and Fuel Treatment	Acres														
Decade 1		10505	0	-10505	-663	-2548	-10505	-8322	0	-3980	-2548	-3730	-2453	+913	-4593
2			-3388	-10505	-4396	-2788	-10505	-9312	-3388	-4947	-2788	-6155	-2338	-3100	-6109
3			-5864	-10505	-4136	-3551	-10505	-9049	-5864	-5428	-3551	-6726	-3070	-3079	-4118
4			-5372	-10505	-4016	-6034	-10505	-4970	-5372	-5792	-6034	-6181	-4246	-3643	-3045
5			-5586	-10505	-4703	-5163	-10505	-8104	-5586	-6718	-5163	-6307	-4558	-4639	-2178
Minerals															
Mineral Leases and Permits	Cases														
Decade 1		690	0	-390	+96	+96	-390	-95	+1	-95	+1	-38	+96	+40	+40
2			+40	-340	+149	+149	-340	-30	+60	-30	+60	+24	+149	+96	+96
3			+60	-380	+89	+89	-380	-90	0	-90	0	-36	+89	+36	+36
4			+60	-400	+84	+84	-400	-115	-25	-115	-25	-61	+84	+11	+11
5			+90	-400	+84	+84	-400	-125	-35	-125	-35	-61	+54	+1	+1
HCAD															
Human Resource Programs	Enr. Yr.														
Decade 1		20	0	-20	0	0	-20	0	0	-18	0	0	0	0	0
2			0	-20	0	0	-20	0	0	-18	0	0	0	0	0
3			0	-20	0	0	-20	0	0	-18	0	0	0	0	0
4			0	-20	0	0	-20	0	0	-18	0	0	0	0	0
5			0	-20	0	0	-20	0	0	-18	0	0	0	0	0
Lands															
Land Pur. & Acq. (exc.)	Cases														
Decade 1		2	0	-2	-2	-2	-2	-2	0	0	0	0	0	0	0
2			0	-2	0	-2	-2	-2	+1	0	-1	0	0	0	0
3			0	-2	0	-2	-2	-2	+1	0	0	+1	+1	0	0
4			0	-2	0	-2	-2	-2	+2	0	-1	0	0	0	0
5			0	-2	0	-2	-2	-2	+2	0	-1	+1	+1	0	0

OUTPUT/ACTIVITY	UNITS	CURRENT PROGRAM FIRST DECADE	ALT. A CURRENT PROGRAM	BENCHMARKS					ALTERNATIVES						
				MINIMUM LEVEL	MAXIMUM TIMBER	MAXIMUM RANGE	PNV MARKET	PNV ASSIGN.	(B) COMPO-SITE	(C) CONSTR. BUDGET	(D) CURRENT BUDGET	(E) NON-MARKET	(F) MARKET	(G) 1980 RPA	(H) HIGH PROD
Soils															
Soil & Water Resources Imp.	Acres														
Decade 1		51	0	-51	-5	-5	-51	0	+34	-18	-8	+34	+12	+50	+12
2			+12	-51	+7	+7	-51	+12	+87	-18	-5	+87	+24	+111	+34
3			+29	-51	+7	+7	-51	+29	-16	-18	+17	-16	+41	-12	+50
4			+12	-51	+7	+7	-51	+29	-16	-18	+17	-31	+24	-32	-39
5			-13	-51	-18	-18	-51	-13	-31	-18	-4	-31	-1	-32	+19
Facilities															
Arterial & Collector Roads Construction/Reconstruction	Miles														
Decade 1		2	0	-2	0	0	-2	-2	0	-1	0	0	0	0	0
2			-1	-2	-1	-1	-2	-2	-1	-2	-1	-1	-1	-1	-1
3			-1	-2	-1	-1	-2	-2	-1	-2	-1	-1	-1	-1	-1
4			-1	-2	-1	-1	-2	-2	-1	-2	-1	-1	-1	-1	-1
5			-1	-2	-1	-1	-2	-2	-1	-2	-1	-1	-1	-1	-1
Local Road Construction	Miles														
Decade 1		28	0	-28	-11	-11	-23	-23	0	-13	-13	-19	-11	-4	+3
2			-10	-28	-1	-1	-26	-26	-10	-10	0	-9	-1	0	0
3			-13	-28	-4	-4	-26	-26	-14	-11	-8	-17	-4	-13	-15
4			-17	-28	-19	-28	-26	-26	-17	-11	-16	-21	-19	-19	-23
5			-21	-28	-23	-23	-26	-25	-21	-18	-22	-23	-23	-23	-23
Local Road Reconstruction	Miles														
Decade 1		32	0	-32	+8	+8	-31	-31	0	+1	+6	-1	+8	+14	+23
2			+2	-32	-5	-5	-31	-31	+2	-9	-6	-14	-5	-7	-7
3			-11	-32	-16	-16	-31	-31	-11	-17	-15	-12	-16	-5	-10
4			-10	-32	-6	-6	-31	-31	-10	-19	-12	-9	-6	-2	-6
5			-10	-32	-4	-4	-31	-31	-11	-16	-17	-9	-4	-4	-5
Trail Construction Reconstruction	Miles														
Decade 1		0	0	0	+7	+7	0	0	+33	0	0	+37	+7	0	+2
2			0	0	+7	+7	0	0	+70	0	0	+38	+7	0	+2
3			0	0	+7	+7	0	0	+40	0	0	+38	+7	0	+2
4			0	0	+7	+7	0	0	0	0	0	+33	+7	0	+2
5			0	0	+7	+7	0	0	0	0	0	+33	+7		

OUTPUT/ACTIVITY	UNITS	CURRENT PROGRAM FIRST DECADE	ALT. A CURRENT PROGRAM	BENCHMARKS					ALTERNATIVES						
				MINIMUM LEVEL	MAXIMUM TIMBER	MAXIMUM RANGE	PNV MARKET	PNV ASSIGN.	(B) COMPO-SITE	(C) CONSTR. BUDGET	(D) CURRENT BUDGET	(E) NON-MARKET	(F) MARKET	(G) 1980 RPA	(H) HIGH PROD
Benefits															
Recreation Developed	M $														
Decade 1		1929	0	-1916	-64	+247	+33	+1	+32	-816	+1	-98	+33	-422	-275
2			+725	-1916	+695	+773	+765	+765	+765	-782	+9	+244	+765	-314	+356
3			+2037	-1916	+755	+298	+2457	+2456	+2456	-655	+168	+1131	+2457	+805	-17
4			+3350	-1916	+755	+298	+6085	+4907	+4907	-431	+244	+1131	+6085	+251	+2593
5			+6825	-1916	+755	+298	-287	+6384	+6384	-207	+318	+2268	+9713	+2862	+5204
Dispersed	M $														
Decade 1		6917	0	-3074	+388	+2116	+259	+734	+734	-37	+150	+257	+259	-2743	-942
2			+1370	-2442	+1333	+2712	+824	+3099	+3099	+1333	+1344	+8672	+824	-1060	+170
3			+3948	-1923	+4197	+5598	+4267	+4879	+4879	+1583	+3807	+4416	+4267	-1262	+2274
4			+7852	-1923	+4357	+10994	+6254	+11625	+11625	+4703	+7708	+8592	+6254	-87	+5039
5			+11792	-1923	+12885	+11298	+8431	+13171	13171	+6123	+11676	+12885	+8431	+1187	+8691
Wilderness															
Decade 1		90	0	+517	+318	-42	+1	0	0	-7	0	+1	+1	-30	-13
2			+31	+737	+318	-42	+15	+29	+51	+38	+29	+51	+15	-24	+13
3			+101	903	+318	-42	+92	+100	+100	+61	+100	+100	+92	-10	+73
4			+207	+903	+318	-42	+163	+207	+214	+133	+207	+214	+163	+5	+164
5			+313	+903	+318	-42	+220	+312	+327	+207	+312	+327	+220	+38	+255
Range															
Decade 1		927	0	-927	+16	+32	-40	-40	0	-40	0	-202	+16	+32	+56
2			0	-927	+16	+32	-65	-65	0	-65	0	-202	+16	+40	+121
3			0	-927	+16	+32	-80	-80	0	-80	0	-202	+16	+48	+145
4			0	-927	+16	+32	-97	-97	0	-97	0	-202	+16	+56	+169
5			0	-927	+16	+32	-121	-121	0	-121	0	-202	+16	+64	+193
Timber															
Decade 1		1211	0	-1211	+371	+304	-842	-842	0	-60	+284	+50	+254	+579	+542
2			+46	-1211	-305	-503	-895	-895	+46	-235	-155	-281	-58	-613	-679
3			-247	-1211	+131	-455	-248	-248	-247	-261	-683	-314	-838	-360	-515
4			-699	-1211	-1247	-145	-229	-229	-699	-458	-349	-400	-303	-465	-287
5			-471	-1211	-488	-380	-585	-585	-471	-963	-316	-221	-470	-813	-743
Wildlife	WFUD'S														
Decade 1		5551	0	-711	+80	-844	-711	+93	+114	+80	+86	+92	+80	+81	+81
2			+98	-1198	+160	-2436	-1198	+733	+783	-262	+385	+733	+160	+418	+162
3			+129	-1707	+72	-3321	-1707	+652	+766	-558	-42	+652	+72	+379	-68
4			+159	-2120	+37	-3856	-2120	+627	+783	-602	-70	+627	+37	+290	-407
5			+190	-2092	+53	-4164	-2092	+652	+783	-575	-58				

OUTPUT/ACTIVITY	UNITS	CURRENT PROGRAM FIRST DECADE	ALT. A CURRENT PROGRAM	BENCHMARKS					ALTERNATIVES						
				MINIMUM LEVEL	MAXIMUM TIMBER	MAXIMUM RANGE	PNV MARKET	PNV ASSIGN	(B) COMPO-SITE	(C) CONSTR. BUDGET	(D) CURRENT BUDGET	(E) NON-MARKET	(F) MARKET	(G) 1980 RPA	(H) HIGH PROD
Water Yield	M $														
Decade 1		251	0	-251	-47	-12	-99	-99	0	+17	+29	-23	+70	+47	+6
2			+234	-251	+210	-12	-158	-158	+234	+99	+193	+82	+198	+315	+274
3			+222	-251	+187	-58	-199	-199	+222	+53	+152	+76	+175	+216	+175
4			+140	-251	+175	-64	-193	-193	+140	+53	+158	+82	+175	+117	+99
5			+99	-251	+234	-76	-163	-163	+99	+123	+158	+64	+216	+187	+181
Minerals	M $														
Decade 1		2884	0	-1172	+30	+30	-1172	+19	+19	-219	+19	+14	+30	-348	-421
2			+197	-1043	+185	+185	-1043	+198	+198	-119	+198	+194	+185	-243	-240
3			+154	-1043	+142	+142	-1043	+117	+117	-158	+117	+150	+142	-279	-279
4			+15	-1043	+20	+20	-1043	+32	+32	-186	+32	+29	+20	-397	-398
5			-56	-1043	-71	-71	-1043	-59	-59	-184	-59	-62	-71	-462	-462
Other	M $														
Decade 1		21	0	0	0	0	0	0	0	0	0	0	0	0	0
2			0	0	0	0	0	0	0	0	0	0	0	0	0
3			0	0	0	0	0	0	0	0	0	0	0	0	0
4			0	0	0	0	0	0	0	0	0	0	0	0	0
5			0	0	0	0	0	0	0	0	0	0	0	0	0
Total Benefits	M $														
Decade 1		19781	0	-8745	+1092	+1223	-2571	-134	+899	-1082	+569	+91	+743	-2804	-966
2			+2701	-8251	+2612	+748	-1755	+3706	+5176	+7	+2003	+9493	+2105	+1481	+177
3			+6344	-8075	+5818	+2282	+3539	+7677	+8293	-15	+3619	+6009	+6383	-463	+1788
4			+11024	-8488	+4431	+7382	+8820	+16879	+17002	+3115	+7930	+10062	+12447	-230	+6972
5			+18692	-8460	+13702	+7089	+14360	+19591	+20234	+4403	+12031	+15711	+18108	+3433	+12705
Receipts	M $														
Recreation-Developed															
Decade 1		181	0	-168	+21	+21	+3	+3	+3	-71	0	-9	+3	-15	0
2			+63	-168	+98	+67	+66	+66	+66	-68	0	+21	+66	-4	+64
3			+177	-168	+105	+26	+214	+214	+214	-57	+15	+98	+214	+110	+26
4			+291	-168	+105	+26	+529	+517	+427	-38	+21	+133	+529	+53	+291
5			+230	-168	+105	+26	+845	+556	+556	-18	+27	+197	+845	+318	+566
Range	M $														
Decade 1		116	0	-116	+2	+4	-5	-5	0	-5	0	-25	+2	+4	+7
2			0	-116	+2	+9	-8	-8	0	-8	0	-25	+2	+5	+15
3			0	-116	+2	+15	-10	-10	0	-10	0	-25	+2	+6	+18
4			0	-116	+2	+22	-12	-12	0	-12	0	-25	+2	+7	+21
5			0	-116	+2	+28	-15	-15	0	-15	0	-25	+2	+8	+24

				BENCHMARKS					ALTERNATIVES						
OUTPUT/ACTIVITY	UNITS	CURRENT PROGRAM FIRST DECADE	ALT. A CURRENT PROGRAM	MINIMUM LEVEL	MAXIMUM TIMBER	MAXIMUM RANGE	PNV MARKET	PNV ASSIGN.	(B) COMPO-SITE	(C) CONSTR. BUDGET	(D) CURRENT BUDGET	(E) NON-MARKET	(F) MARKET	(G) 1980 RPA	(H) HIGH PROD
Timber	M $														
Decade 1		1198	0	-1198	+371	-304	-839	-839	0	-60	+284	+50	+254	+579	+542
2			+46	-1198	-305	-503	-892	-892	+46	-235	-155	-281	-58	-613	-679
3			-247	-1198	+131	-455	-248	-248	-247	-261	-683	-314	-838	-360	-515
4			-699	-1198	-1198	-145	-229	-229	-699	-458	-349	-411	-303	-465	-287
5			-471	-1198	-488	-80	-585	-585	-471	-963	-316	-221	-470	-813	-743
Other	M $														
Decade 1		21	0	0	0	0	0	0	0	0	0	0	0	0	0
2			0	0	0	0	0	0	0	0	0	0	0	0	0
3			0	0	0	0	0	0	0	0	0	0	0	0	0
4			0	0	0	0	0	0	0	0	0	0	0	0	0
5			0	0	0	0	0	0	0	0	0	0	0	0	0
Total Receipts	M $														
Decade 1		1528	0	-1489	+396	-277	-848	-842	+4	-137	+285	+16	+261	+569	+550
2			+110	-1488	-202	-424	-840	-834	+114	-311	-153	-284	+13	-610	-598
3			-68	-1488	+240	-412	-50	-45	-33	-329	-668	-241	-620	-243	-470
4			-406	-1489	-1138	-95	+281	+274	-272	-510	-328	-304	+230	-404	+26
5			-239	-1489	-379	-325	+238	-46	+85	-998	-289	-50	+378	-486	-152
Costs															
Recreation	M $														
Decade 1		640	0	-500	+242	-191	+248	+86	+329	-163	+77	+1664	+242	+351	-161
2			+103	-485	+323	-191	+330	+215	+502	-157	+207	+1070	+323	+33	-157
3			+93	-470	+728	-77	+734	+38	+543	-109	+27	+1377	+341	+1712	+22
4			+192	-470	+1889	-53	+1895	+49	+534	-104	+41	+1371	+1889	+961	+35
5			+13	-470	+2899	+51	+2887	+72	+514	-100	+64	+1468	+2889	+521	-109
Wildlife	M $														
Decade 1		119	0	-119	+25	-49	-52	+74	+256	-67	+7	+103	+25	+49	+360
2			+12	-119	+28	-49	-42	+105	+206	-66	+1	+148	+28	+16	+364
3			+20	-119	+25	-51	-34	+114	+238	-63	-2	+155	+25	+55	+499
4			+17	-119	+29	-51	-16	+135	+187	-60	-6	+190	+29	+60	+556
5			+22	-119	+28	-47	+6	+152	+221	-59	-9	+213	+28	+63	+412
Range	M $														
Decade 1		380	0	-380	+150	+313	-140	-140	+110	-140	-70	-87	+150	+75	+314
2			0	-380	+177	+376	-146	-146	+252	-146	-71	-115	+177	+141	+376
3			+6	-380	+191	+395	-151	-151	+262	-151	-80	-108	+190	+163	+394
4			+2	-380	+198	+195	-156	-156	+191	-156	-113	-105	+198	+168	+193
5			+9	-380	+214	+216	-152	-152	+193	-152	-109	-100	+214	+177	+217

				BENCHMARKS					ALTERNATIVES						
OUTPUT/ACTIVITY	UNITS	CURRENT PROGRAM FIRST DECADE	ALT. A CURRENT PROGRAM	MINIMUM LEVEL	MAXIMUM TIMBER	MAXIMUM RANGE	PNV MARKET	PNV ASSIGN.	(B) COMPO-SITE	(C) CONSTR. BUDGET	(D) CURRENT BUDGET	(E) NON-MARKET	(F) MARKET	(G) 1980 RPA	(H) HIGH PROD
Timber	M $														
Decade 1		2500	0	-2500	-562	-1548	-2171	-2171	0	-1273	-676	-1272	-793	-47	-635
2			-1173	-2500	-951	-1852	-2270	-2270	-1173	-1168	-784	-1531	-816	-687	-1482
3			-1429	-2500	-1265	-1369	-207	-2207	-1429	-1169	-764	-1435	-749	-936	-1290
4			-519	-2500	-4	-1597	-1632	-1632	-519	-1168	-690	-1142	+287	+433	-37
5			-1186	-2500	-938	-1667	-1919	-1919	-1186	-1169	-701	-937	-1016	+897	-803
Roads (Appropriated)	M $														
Decade 1		48	0	-48	-24	0	+9	+9	-24	0	+135	-24	0	-24	0
2			-24	-48	-24	-19	-24	-25	-48	-24	-25	-24	-24	-24	-24
3			-24	-48	-24	-48	-24	-24	-48	-24	-24	-24	-24	-24	-24
4			-24	-48	-24	-24	-24	-24	-48	-24	-24	-24	-24	-24	-24
5			-24	-48	-24	-24	-24	-24	-48	-24	-24	-24	-24	-24	-24
Protection	M $														
Decade 1		226	0	-36	+464	+444	+459	+460	+147	+131	+4	+131	+548	+466	+460
2			+109	-36	+458	+444	+454	+458	+109	+116	+119	+119	+539	+487	+123
3			+109	-36	+453	+444	+108	+458	+109	+120	+109	+119	+538	+457	+123
4			+109	-36	+458	+444	+108	+458	+109	+120	+119	+119	+539	+457	+123
5			+109	-36	+456	+444	+108	+462	+109	+120	+119	+119	+537	+457	+123
Other	M $														
Decade 1		2310	0	-1935	+131	-1189	-1577	-439	+575	-573	-227	+19	+81	+259	+229
2			-1	-1893	+247	-1031	-1561	-268	+761	-552	-207	-94	+247	+255	+784
3			+16	-1886	+274	-1079	-1505	-171	+208	-575	-240	-67	+324	+543	+789
4			+36	-1880	+672	-833	-1318	+126	+486	-597	-243	-3	+692	+519	+1055
5			+21	-1884	+769	-832	-1457	+321	+482	-609	-231	-29	+742	+1321	+1396
Total Forest Budget	M $														
Decade 1		6223	0	-5518	+426	-2220	-3224	-2121	+1393	-2085	-750	+534	+253	+1129	+264
2			-974	-5461	+258	-2322	-3259	-1931	+609	-7997	-760	-427	+474	+221	-322
3			-1209	-5439	+382	-2285	-3079	-1943	-117	-1971	-974	+17	+645	+1970	-25
4			-187	-5433	+3218	-1919	-1143	-1044	+940	-1989	-916	+406	+3610	+2574	+1473
5			-1036	-5437	+3404	-1859	-551	-1088	+285	-1993	-891	+710	+3370	+1618	+872
Operation & Mtce. Portion of Budget	M $														
Decade 1		3892	0	-3187	+960	-1075	-1325	-313	+976	-908	-331	+1165	+775	+728	+618
2			+79	-3130	+1062	-966	-1268	-155	+1191	-942	-59	+354	+1048	+700	+672
3			+10	-3108	+1038	-909	-1494	-195	+624	-973	-356	+564	+1113	+1050	+719
4			+145	-3102	+2160	-625	-798	+323	+887	-994	-451	+803	+1724	+1330	+987
5			-61	-3106	+2207	-593	-821	+429	+1033	-1029	-397	+913	+2007	+2201	+1210

OUTPUT/ACTIVITY	UNITS	CURRENT PROGRAM FIRST DECADE	ALT. A CURRENT PROGRAM	BENCHMARKS					ALTERNATIVES						
				MINIMUM LEVEL	MAXIMUM TIMBER	MAXIMUM RANGE	PNV MARKET	PNV ASSIGN.	(B) COMPO-SITE	(C) CONSTR. BUDGET	(D) CURRENT BUDGET	(E) NON-MARKET	(F) MARKET	(G) 1980 RPA	(H) HIGH PROD
Investment Portion of Budget	M $														
Decade 1		2331	0	-2331	-534	-1145	-1899	-1808	417	-1177	-419	-631	-522	+401	-354
2			-1053	-2331	-804	-1356	-1991	-1776	-582	-1055	-701	-781	-574	+479	-994
3			-1219	-2331	-656	-1376	-1585	-1748	-741	-998	-618	-547	-468	+920	-744
4			-332	-2331	+1058	-1294	-345	-1367	+53	-995	-465	-397	+1886	+1244	+486
5			-975	-2331	-1197	-1266	+270	-1517	-748	-964	-494	-203	+1363	-583	-338
Non-Forest Service Costs (Purchaser Constructed Roads)	M $														
Decade 1		239	0	-239	-71	-121	-205	-205	0	-96	-80	-116	-63	+6	+37
2			-69	-239	-27	-151	-221	-221	-69	-92	-12	-115	-15	-14	-105
3			-121	-239	-89	-157	-197	-197	-121	-116	-93	-138	-66	-106	-112
4			-139	-239	-112	-122	-145	-145	-139	-124	-140	-119	-149	-144	-136
5			-175	-239	-172	-162	-174	-174	-175	-163	-171	-190	-174	-172	-149
Returns to Treasury	M $														
Decade 1		1528	0	-1489	+396	-277	-848	-842	+4	-137	+285	+16	+261	+569	+550
2			+110	-1488	-202	-424	-840	-834	+114	-311	-153	-284	+13	-610	-598
3			-68	-1488	+240	-412	-50	-45	-33	-329	-668	-241	-620	-243	-470
4			-406	-1489	-1138	-95	+281	+274	-272	-510	-328	-304	+230	-404	+26
5			-239	-1489	-379	-325	+238	-46	+85	-998	-289	-50	+378	-486	-152

*Changes from Current are average annual for the decade. Dollar amounts are average annual for the decade expressed in 1978 dollars, inflated to 1/1/82.

Tables II-20, 21, 22, 23, and 24 present information on discount values and comparison of Present Net Value by alternatives.

TABLE II-20
BENEFITS AND RECEIPTS OF OUTPUTS INCLUDED IN PNV ANALYSIS
(1978 dollars inflated in 1/1/82)

SOURCE	RESOURCE	OUTPUT MEASURE	BENEFITS
Historical Forest Data	Softwood/Sawtimber/Roundwood	MCF	calculated by FORPLAN
	Hardwood/Sawtimber/Roundwood	MCF	32.72
	Softwood/Roundwood	MCF	69.00
	Hardwood/Roundwood	MCF	32.72
	Softwood/Hardwood/Firewood	MCF	32.72
RPA	Developed Recreation Use	RVD	4.14
	Dispersed Recreation Use	RVD	4.14
	Wilderness Use	RVD	11.03
	Big Game User Day	WFUD	31.85
	Cold Water Fish User Day	WFUD	24.61
	Livestock Use	AUM	8.06
Region 4	Mineral Materials Sold	M TONS	250.00
	Mineral Materials Free Use	M TONS	250.00
	Mineral Materials Inservice	M TONS	250.00
	Uranium Production	BBTU	15.99
	Oil & Gas Production	BBTU	417.24
	Lease Rentals Non-Energy	ACRES	1.00
	Lease Rentals - Energy	ACRES	1.00
	Coal Production	BBTU	140.38
	Incressed Water Yield	AC/FT	58.38

SOURCE	RESOURCE	OUTPUT MEASURE	RECEIPT (1982 $)
Historical Forest Data	Sawtimber	MMBF	calculated by FORPLAN
	Roundwood	MMBF	$23,000.00
	Fuelwood	MMBF	$ 6,100.00
	Recreation (Developed)	RVD	$ .36
	Recreation (Special Uses)	$/Year	$13,000.00 (constant)
	Range	AUM	$ 1.01
	Minerals	CASE	$ 18.09
	Land Use	$/Year	$ 9,000.00 (constant)
	Power	$/Year	$12,000.00 (constant)

Definitions:

RPA - Resource Planning Act; 1980 Assessment.

Region 4 - Developed by Intermountain Region, Forest Service, for use in Forest Planning

TABLE II-21
PRESENT NET VALUE AND NON-PRICED OUTPUTS
(MM 1978 Dollars Inflated to 1/1/82)
(Discount Rate 4%)

	PNV	PVC	PVB	VQO Retention M Acres	VQO Partial Retention M Acres	Wildlife Emphasis Management M Acres	Declining Watershed Condition M Acres	Percent of Forest With Moderate or Low Restrictions For Mineral Activities	No. Of Deer In 2030 M Numbers	No. Of Elk In 2030 Numbers
CURRENT PROGRAM										
Decade 1	109.4	53.1	162.5	850	629	130.9	102	93		
2	94.7	30.1	124.8	848	617	130.9	79	93		
3	78.7	19.3	98.0	844	603	130.9	56	93		
4	62.6	15.5	78.1	841	591	130.9	33	93		
5	56.9	9.0	65.9	838	578	130.9	11	93	53.5	1800
COMPOSITE										
Decade 1	105.4	64.5	169.9	850	629	449.2	102	94		
2	99.7	38.9	138.6	848	617	449.2	79	94		
3	82.0	23.3	105.3	844	603	449.2	56	94		
4	74.8	18.4	93.2	841	591	449.2	31	94		
5	57.3	11.2	68.5	778	578	449.2	11	94	53.5	2900
CONSTRAINED BUDGET										
Decade 1	118.4	35.2	153.6	852	633	32.5	113	92		
2	85.6	24.3	109.9	849	625	32.5	113	92		
3	57.7	16.4	74.1	845	617	32.5	112	92		
4	47.0	11.0	58.0	844	603	32.5	112	92		
5	34.0	7.4	41.4	841	592	32.5	112	92	45.5	1500
CURRENT BUDGET										
Decade 1	120.9	46.3	167.2	850	626	130.9	108	93		
2	89.4	31.6	121.0	847	614	130.9	97	93		
3	67.6	20.2	87.8	844	603	130.9	87	93		
4	56.5	13.7	70.2	841	591	130.9	76	93		
5	45.3	9.2	54.5	837	576	130.9	66	93	51.7	1800
NON-MARKET										
Decade 1	106.8	56.5	163.3	854	642	693.4	98	84		
2	129.6	32.9	162.5	851	630	693.4	66	84		
3	72.9	23.8	96.7	848	622	693.4	36	84		
4	58.5	17.1	75.6	845	612	693.4	10	84		
5	48.8	12.0	60.8	843	600	693.4	0	84	56.0	3000
MARKET										
Decade 1	113.9	54.7	168.6	830	606	41.0	113	92		
2	83.1	38.4	121.5	806	570	41.0	112	92		
3	71.7	26.4	98.1	780	531	41.0	112	92		
4	56.6	25.1	81.7	753	500	41.0	111	92		
5	48.4	16.5	64.9	725	450	41.0	111	92	52.1	1500

Benchmarks	PNV	PVC	PVB	VQO Retention M Acres	VQO Partial Retention M Acres	Wildlife Emphasis Management M Acres	Declining Watershed Condition M Acres	Percent of Forest With Moderate or Low Restrictions For Mineral Activities	No. Of Deer In 2030 M Numbers	No. Of Elk In 2030 Numbers
RPA 1980										
Decade 1	77.1	62.4	139.5	849	623	134.2	112	94		
2	64.6	37.0	101.6	844	603	134.2	111	94		
3	41.3	31.2	72.5	838	581	134.2	110	94		
4	27.0	22.5	49.5	834	562	134.2	110	94		
5	26.2	13.5	39.7	828	542	134.2	110	94	54.8	2200
HIGH PRODUCTIVITY										
Decade 1	99.0	55.6	154.6	831	607	42.0	113	94		
2	77.3	33.5	110.8	803	566	42.0	112	94		
3	57.2	23.7	80.9	773	521	42.0	112	94		
4	48.0	19.8	67.8	743	476	42.0	111	94		
5	43.3	12.3	55.6	710	426	42.0	112	94	45.0	1500

TABLE II-22
PRESENT NET VALUE AND QUALITATIVE EFFECTS
(MM 1978 Dollars Inflated to 1/1/82)

	PNV	PVC	PVB	Narrative
Alternatives				
Current Program	402.3	127.0	529.3	Timber outputs decline, but most outputs remain the same during the planning period except those that increase due to public demand, such as recreation and minerals.
Composite	419.1	156.4	575.5	Most outputs increase or remain the same compared to the Current Program Alternative and maintains a strong level of amenity values.
Constrained Budget	342.9	94.2	437.1	Generally, all outputs are at a low level, but compared to others, has low costs.
Current Budget	379.5	121.1	500.6	Maintains a moderate level of outputs and costs throughout the planning period, but quality of the forest gradually declines.
Non-Market	416.8	142.2	559.0	Produces low timber and range outputs, but has high outputs in dispersed recreation and amenity values.
Market	373.6	161.2	534.8	Produces high timber, range and developed recreation outputs, but has high costs.
RPA 80	236.1	166.7	402.8	PNV is low because although commodity outputs are higher in this Alternative, the cost of producing the additional outputs are proportionately higher.
High Productivity	324.9	144.9	469.8	Produces the highest timber and range outputs but without high costs. Low outputs in other resources.

TABLE II-23
PRESENT NET VALUE AND PRICED OUTPUTS
(Thousands of 1978 Dollars Inflated to 1/1/82)*

	PNV	PV COSTS**	PV BENEFITS	PV BENEFITS BY RESOURCE							PVC COSTS BY MAJOR COST CATEGORIES					
				REC.	RGE.	TBR.	WL.	WTR.	MIN.	OTHER	TBR***	REC.	WL.	RGE.	PROTEC.	OTHER
Current Program	402340	127000	529340	290470	20190	23120	122590	8110	64400	460	42910	15360	2810	8310	6430	51180
Composite	419100	156430	575530	326900	20190	23120	132300	8110	64450	460	42910	23690	7580	12370	7600	62280
Constrained Budget	342860	94240	437100	216070	18740	20770	115430	6690	58940	460	31000	10870	1180	5090	7600	38500
Current Budget	379570	121060	500630	260450	20190	23830	123230	8020	64450	460	42180	16030	2610	6530	6530	47180
Non-Market	416740	142220	558960	318480	15790	22600	130810	6330	64490	460	28050	44700	5670	6070	7610	50120
Market	373660	161180	534840	294500	20530	23410	122820	8610	64510	460	43220	28720	3170	12070	16720	57280
RPA 80	236100	166750	402850	166160	21100	23790	126600	9020	55720	460	50380	26750	3550	11010	15100	59960
High Productivity	324880	144870	469750	240110	22620	23100	120060	8260	55140	460	38540	11550	3880	15280	10370	65250

* Direct comparisons of benefits and costs displayed for individual resource outputs provide general indications of relationships but may be misleading because some outputs in multiple use forestry have common costs of production that cannot be easily separated and attributed to individual resources.

** 4% Discount Rate used.

*** Includes non-Forest Service Costs (Purchaser Road Construction).

NOTE: Support costs to these program components (Tbr, Rec, Wl, Rge, Other, etc.) from other program components are included.

TABLE II-23a
PRESENT NET VALUE AND PRICED OUTPUTS
(Thousands of 1978 Dollars Inflated to 1/1/82)*

	(RECEIPTS)	PV	PV	------------- PV RECEIPTS BY RESOURCE-------------						---------PVC COSTS BY MAJOR COST CATEGORIES----------						
	PNV	COSTS**	RECEIPTS	REC.	RGE.	TBR.	WL.	WTR.	MIN.	OTHER	TBR***	REC.	WL.	RGE.	PROTEC.	OTHER
Current Program	-94840	127000	32160	6080	2520	22820	0	0	280	46	42910	15360	2810	8310	6430	51180
Composite	-123180	156430	33250	7160	2520	22820	0	0	290	460	42910	23690	7580	12370	7600	62280
Constrained Budget	-68060	94240	26180	2640	2340	20490	0	0	250	460	31000	10870	1180	5090	7600	38500
Current Budget	-90130	121060	30930	4100	2520	23560	0	0	290	460	42180	16030	2610	6530	6530	47180
Non-Market	-112150	142220	30070	5030	1990	22320	0	0	270	460	28050	44700	5670	6070	7610	50120
Market	-126790	161180	34390	7920	2570	23130	0	0	310	460	43220	28720	3170	12070	16720	57280
RPA 80	-134980	166750	31770	4870	2640	23510	0	0	290	460	50380	26750	3550	11010	15100	59960
High Productivity	-112350	144870	32520	6110	2830	22830	0	0	290	460	38540	11550	3880	15280	10370	65250

* Direct comparisons of receipts and costs displayed for individual resource outputs provide general indications of relationships but may be misleading because some outputs in multiple use forestry have common costs of production that cannot be easily separated and attributed to individual resources.

** 4% Discount Rate used.

*** Includes non-Forest Service Costs (Purchaser Road Construction).

NOTE: Support costs to these program components (Tbr, Rec, Wl, Rge, Other, etc.) from other program components are included.

G. VEGETATION MANAGEMENT PRACTICES

This section describes the timber stand treatment methods that will be used to achieve long-term sustained yield. These methods are further described in the Regional Guide for the Intermountain Region (Chapter 3) and in the Standards and Guidelines of the Forest Plan.

1. Even-aged Management

a. Clearcut Methods

Clearcut methods (patch, strip or stand) are used in insect and disease infested stands of all conifers and in stands of pure aspen. The basic objective is to replace the existing defective or mature stand with young healthy trees through natural or artificial regeneration. Small patch clearcuts, usually less than four acres will be used in ponderosa pine and mixed conifer to remove heavy pockets of dwarf mistletoe. Similar patch cuts and narrow strip cuts may be used in the Engelmann spruce - subalpine fir type to remove root rot center and harvest mature trees where partial cutting would create risk of blowdown. Stand clearcuts, less than 40 acres, will be used to harvest stands (clones) of mature aspen.

b. Shelterwood Methods

Shelterwood methods are the most widely used in stands of generally healthy conifers. The following treatments are generally applied:

Precommercial thinning. Applied in dense stands or clumps of saplings and poles to reduce numbers of trees for maximum diameter growth to commercial size. Cleaning and weeding (removal of undesirable species and rough or damaged trees) may be applied at this time or in conjunction with intermediate cutting.

Intermediate cutting. This improvement cutting is the first commercial thinning applied to small sawtimber sized trees to improve tree quality and species composition of the residual stand and the reduce trees per acre for optimum volume increment consistent with objective tree diameter. Intermediate cutting may be applied in conjunction with overstory removal cutting in denser unmanaged stands. Two or more intermediate cuttings may be done over a period forty to sixty years before the preparatory or seed cut.

Preparatory cutting. This entry may be made in dense unmanaged stands at or near maturity with inadequate advance regeneration for the purpose of developing desirable seed trees. The objective is to leave about 50 percent crown cover and give residual seed trees room to develop fell crowns.

Seed cutting. This the regeneration cut of a shelterwood applied in a mature stand. Stand density is reduced to 25 to 45 square feet of basal area per acre. The best potential seed bearing trees are left which will also provide shelter for the regeneration.

Removal cutting. This is the final step of a shelterwood where seed trees are removed when regeneration is firmly established, usually within 30 years after the seed cut. One to three removal cuts may be made depending on site conditions and mitigation requirements for other resources (visual quality, wildlife cover, etc.)

2. Uneven-aged Management

The basic objective of uneven-age management is to create or maintain uneven-age stands of timber by maintaining equal numbers of trees in each diameter class. This system will only be used in special cases on the Dixie National Forest, mostly to satisfy objectives other than timber management, e.g. vertical diversity for certain wildlife or visual quality.

a. Individual Tree Selection

A combination of cutting taken place each entry where mature trees are harvested. Excess trees in each diameter class are cut (intermediate cutting) and clumps of saplings are precommercially thinned. Regeneration is an associated objective.

b. Group Selection

This method is applied to create or maintain a clumpy arrangement of trees within a stand. All trees in a single group (several trees up to 2 acres) are either cut or left. Openings created are regenerated by natural or artificial means.

c. Sanitation - Salvage

This method may be applied in special situations under even or uneven-age systems. The objective is to remove appropriate trees to prevent the spread of insects or disease and to utilize dead or dying trees. Sanitation - salvage cutting may be used if necessary in areas outside of the timber base such as developed recreation areas and non-commercial forest land. In some instances, especially in low value stands, prescribed fire might be used as the most appropriate tool for stand conversion.

3. Reforestation

a. Site preparation

Some type of site preparation is usually required prior to regeneration to expose mineral soil and/or remove competing vegetation so tree seedlings can become established and grow at an acceptable rate.

Mechanical. Mechanical means such as discing, ripping, or surface scarification, is done to increase plantability in adverse soil conditions and/or to remove competing vegetation.

Chemical. Herbicides may be used to kill competing vegetation such as grass or brush. Dead plant material is left in place for a mulching effect which is beneficial to the reforestation effort. An environmental analysis is required for each project. Chemical site preparation may be used prior to mechanical or burning methods.

Burning. Prescribed fire may be used as an economical site preparation technique to remove fire slash materials and/or temporarily reduce competing vegetation.

b. Planting

Most reforestation on the Dixie National Forest will be done by planting tree seedlings, bare-root or containerized on 18 to 24 inch scalped spots at a target rate of 400 to 550 trees per acre. Natural regeneration is difficult to obtain in southern Utah because of infrequent seed crops and a seasonal drought during much of the growing season. Natural regeneration of aspen by sprouting is usually successful.

4. Timber Stand Improvement (TSI)

a. Precommercial Thinning

Excess trees smaller than 8 inches in diameter will be cut consistent with density management guideline in FSH 2409.26C and with mitigating requirements for other resources identified during the environmental analysis process for each timber sale or project. The objective of precommercial thinning is to concentrate wood fiber growth on as many trees per acre as possible while maintaining a free growth condition (no competition from stand density) until the stand reaches an average tree diameter of 10-12 inches. An average of 5,000 acres of precommercial thinning will be done each year for the first decade under the Current Program and composite alternatives. TSI levels in other alternatives will vary with timber harvest, budget and other constraints.

b. Other

TSI activities such as release, weeding and cleaning will be done in relatively small amounts in conjunction with precommercial thinning.

5. Harvest of Timber from Unsuitable Lands

The Forest Plan identifies lands that are unsuitable for timber production for reasons of irreversible resource damage and not capable of producing crops of industrial wood products. Data available during Forest Plan development were insufficient to accurately identify some of these areas. The monitoring plan provides for more detailed examination and evaluation of these areas in the near future. some areas may subsequently qualify as suitable and be returned to the timber base.

H. HOW THE ALTERNATIVES ADDRESS THE ISSUES

The following display summarizes how each issue is addressed by the eight alternatives in a comparative format. Most issues are treated differently by each alternative although three are treated the same by each alternative. Appendix A in the appendix document describes all issues in further detail.

I. ECONOMIC VALUES AND RESPONSES TO MAJOR ISSUES, CONCERNS AND OPPORTUNITIES

The major reason that alternatives differ is that each responds to the issues, concerns, and opportunities (ICO's) identified for this Forest in differing ways. This section summarizes these differences by defining indicators of those responses that can be quantified. It also discusses indicators of

HOW THE ALTERNATIVES ADDRESS THE ISSUES

ISSUES	CURRENT PROGRAM	COMPOSITE	CONSTRAINED BUDGET	CURRENT BUDGET	NON-MARKET EMPHASIS	MARKET EMPHASIS	1980 RPA	HIGH PRODUCTIVITY
1. AMOUNT OF EMPHASIS PLACED ON FIRE MGMT.	Provide for adequate fire protection based on Level II fire analysis. Activity fuels disposed of promptly & adequately.	Provide for adequate fire protection based on Level II fire analysis. Activity fuels properly disposed of. Managed fire used to enhance other resources.	Fire protection not adequate to provide complete Level II fire needs. Activity fuels will accumulate & provide increased hazard. No use of managed fire for other resources.	Same as Current Program but in later periods of the plan fire protection not adequate for the increased use projected on the Forest.	Provide for adequate fire protection based on Level II fire analysis. Emphasis on activity fuel disposal & managed fire will be to enhance wildlife habitat.	Provide for adequate fire protection based on Level II fire analysis activity fuels disposed of promptly. Managed fire used extensively for enhancement of timber & range resources.	Same as Market Emphasis Alt.	Same as Market Emphasis Alt.
2. INCREASED DEMAND ON FOREST RESOURCES	All Alternatives assume that an increased demand for forest resources will exist.	Same.	Same.	Same.	Same.	Same.	Same.	Same.
3. SOCIO-ECONOMIC STABILITY OF DEPENDENT COMMUNITIES	Provide for continued stability of communities in first decade. Later decades will have to utilize Aspen and small pine.	Same as Current Program Alt.	Community stability based on NF resource will decline because of reduced levels of resource utilization & recreational & wildlife opportunities.	Same as Current Program Alt.	Reduced timber harvest & grazing levels will create stability problems in those communities dependept on them. Enhancement of scenic & recreation qualities will increase the stability of some communities.	Economic stability of communities dependent on timber & range resources will be maintained. Shortcomings in aesthetic recreation & wildlife pursuits will occur & some loss of stability in sectors dependent on recreation & wildlife may occur.	Same as Market Emphasis Alt.	Same as Market Emphasis Alt.

ISSUES	CURRENT PROGRAM	COMPOSITE	CONSTRAINED BUDGET	CURRENT BUDGET	NON-MARKET EMPHASIS	MARKET EMPHASIS	1980 RPA	HIGH PRODUCTIVITY
4. REDUCE MORTALITY LOSS ACCELERATING HARVEST OF TIMBER	Provide for a moderate acceleration of timber in the 1st decade of the plan. Mortality will continue heavy in mixed & conifer stands.	Same as Current Program Alt.	Lower levels of timber harvest & reduced levels of timber stand improvement work will not provide for a reduction in mortality.	Same as Current Program Alt.	Lower levels of timber harvest & on emphasis if wildlife & scenic enhancement will allow for continued mortality.	Higher levels of timber harvest on all areas excluding high cost logging areas will provide the greatest reduction of mortality. However, some losses will continue until timber stands have been under management for several cutting cycles.	Same as Market Emphasis Alt.	Same as Market Emphasis Alt.
5. EMPHASIZE WILDILFE MANAGEMENT	Wildlife management is emphasized by restructing timber harvest & grazing in areas of critical wildlife habitat. Mitigation of damage to wildlife habitat will be adequate to maintain minimum populations.	Emphasis is provided by more restrictions where timber harvesting & grazing will occur. Essential wildlife habitat areas receive increased emphasis from use of management presumptions.	Lower levels of timber harvest & grazing will provide some enhancement of wildlife habitat but low levels of wildlife habitat improvements will not provide for contining an adequate wildlife program.	Same as Current Program Alt.	Reduced grazing & timber harvest levels in important wildlife areas & increased expenditure for wildlife habitat improvements will provide the highest level of wildlife management emphasis. Large areas of the forest will be managed for wildlife emphasis.	Increased grazing & timber harvest levels & low levels of wildlife habitat improvement expenditure will not provide adequate emphasis to meet desired wildlife goals.	Same as Market Emphasis Alt. but higher levels of wildlife habitat improvement expenditures will provide for mitigation of some adverse effects on the habitat.	Same as Market Emphasis Alt.
6. MANAGEMENT OF FIREWOOD	Current levels of firewood availability will continue. Supplies will continue to dwindle in a radius around Cedar City.	Same as Current Program Alt.	Lower levels of resource utilization & reduced road access will restrict the availability of firewood in the later periods of the plan.	Same as Current Program Alt.	Lower timber harvest levels, & reduced road access will provide for only low levels of firewood availability.	Increased timber harvest levels & increased levels of road access provides for maximum availability of firewood.	Same as Market Emphasis Alt.	Same as Market Emphasis Alt.
7. LIVESTOCK GRAZING LEVELS	Current levels of grazing will continue throughout the planning period.	Same as Current Program Alt.	Reduced levels of administration, & range improvement maintenance & construction will cause a gradual decline in permitted livestock numbers.	Same as Current Program Alt.	Permitted livestock numbers will be reduced in order to provide for wildlife habitat, riparian areas protection, etc.	Increased levels of range improvements & administration will provide for an increase in permitted livestock numbers.	Same as Market Emphasis Alt.	Same as Market Emphasis Alt.

ISSUES	CURRENT PROGRAM	COMPOSITE	CONSTRAINED BUDGET	CURRENT BUDGET	NON-MARKET EMPHASIS	MARKET EMPHASIS	1980 RPA	HIGH PRODUCTIVITY
8. PROTECTION OF WATER VALUES	Water values will continue to be protected thru the use of avoidance, mitigation, & stipulation in contracts, permits, etc. Restoration of damaged watersheds will continue but at a slow pace.	Water values will be enhanced by more restrictions on resource use in areas of high erosion hazard, a higher level of coordination activities, & continued use of mitigation & stipulation in contracts, permits, etc. Restoration of damaged watersheds will be completed within the planning period.	Only small watershed restoration projects will be treated. Most acres of declining watershed not treated.	The larger watershed restoration projects will be treated. One-half of the acres of declining watershed treated.	Water values will be significantly enhanced by greater protection of riparian areas & streams & reduced levels of resource use. Restoration of damaged watersheds will be completed.	Water values will continue to be protected, but quality overall will decline due to increased levels of resource uses & road construction. Restoration of damaged watersheds will take place at a moderate place.	Water values will continue to be protected, but quality overall will decline due to increased levels of resource uses & road construction. Aggressive action would be taken to treat soil & water restoration backlog areas of declining watershed due to poor range condition would not be treated.	Same as Market Emphasis Alt.
9. MINERAL EXPLORATION, DEVELOPMENT, & LEASING	Mining activities will continue with some restrictions for the protection of other resource values. Most impacts will be mitigated through the use of protective stipulation.	Same as Current Program Alt.	Same as Current Program Alt. except that impacts from mining on other resource values will increase due to lower levels of the administration of permits and protective stipulations.	Same as Current Program Alt.	Same as Current Program Alt. except that more areas of the Forest will be restricted by stipulations for the protection of other values.	Similar to Current Program Alt's. except that fewer areas of the Forest will be restricted by stipulations for the protection of other values.	Same as Market Emphasis Alt.	Same as Market Emphasis Alt.
10. SCENIC VALUES	Scenic values will continue to be protected along the major road corridors & recreation areas.	Similar to Current Program Alt. except that a greater portion of road corridors & recreation areas will be protected.	Scenic values will decline slightly due to a lack of administration of resource uses.	Same as Current Program Alt.	Scenic values will be maintained at the present level or enhanced. Management activities will emphasize scenic quality in road corridors & around recreation areas or they will be prohibited.	Scenic values will decline due to the increased level of resource uses. A smaller portion of the Forest's road corridors & recreation areas will be protected.	Same as Market Emphasis Alt.	Same as Market Emphasis Alt.

ISSUES	CURRENT PROGRAM	COMPOSITE	CONSTRAINED BUDGET	CURRENT BUDGET	NON-MARKET EMPHASIS	MARKET EMPHASIS	1980 RPA	HIGH PRODUCTIVITY
11. INCREASED RECREATION USE	The Forest's capacity for developed recreation use will be inadequate for the expected increase in recreation visits. The capacity for dispersed recreation will remain adequate, however, quality will diminish gradually.	Similar to Current Program Alt except that some construction of developed facilities will occur & that greater portions of the Forest will be managed for semi-primitive types of recreation.	The Forest's capacity for developed recreation use will decline below the present capacity. The capacity for dispersed recreation area will remain adequate, however, quality will diminish.	Same as Current Program Alt.	The construction of developed recreation facilities will be increased to ensure an adequate capacity for recreation uses. The quantity & quality of dispersed recreation areas will be high	The construction of developed recreation facilities will be increased to ensure an adequate capacity for recreation uses. The quantity of dispersed recreation areas will be adequate.	Same as Market Emphasis Alt.	Same as Market Emphasis Alt.
12.DEVELOPED RECREATION SITES	All alternatives provide for both group sites & single family units in satisfactory proportions.	Same.	Same.	Same.	Same.	Same.	Same.	Same.
13. RECREATION USER CONFLICTS	Conflicts between users are expected to increase gradually over the planning period. However, signs, facilities, & law enforcement efforts will keep the number of conflicts low.	Same as current Program Alt.	Conflicts between motorized & nonmotorized users will increase because of lack of signs, facilities, and law enforcement.	A modest increase over current Program levels of user conflicts can be anticipated late in the planning period.	Emphasis on dispersed recreation facilities. Administration & enforcement will prevent conflicts between motorized and non-motorized users.	Lack of emphasis on dispersed recreation will lead to a moderate level of conflicts between motorized and non-motorized users.	Same as Market Emphasis Alt.	Same as Market Emphasis Alt.
14. TRANSPORTATION SYSTEM SAFETY & CONVENIENCE	Collector & local road systen miles increase gradually. Road maintenance is adequatae for safety & convenience on the majority of the roads on the system.	Same as Current Program Alt.	Collector & Local road system miles declines. Public safety & convenience declines because of low maintenance levels on all roads.	Slightly lower road system miles and maintenance levels than Current Program Alt.	Collector & Local road system miles increase slowly. Public safety & convenience is high because of high maintenance on all roads.	Collector & local system miles increase moderately due to relatively high timber & range levels. Public safety & convenience is only moderate because road maintenance for resource harvest would be emphasized over public safety & convenience.	Same as Market Emphasis Alt.	Same as Market Emphasis Alt.

concern to the nation as a whole. Appendix A provides a full discussion on each of the ICO's and the indicators. The seven major ICO's with the greatest influence on the alternatives and indicators of responsiveness include:

1. The level of timber harvest while responding to other demands on the forest. The indicators are:

a. Volume of timber harvested.
b. Long-term sustained yield.
c. Suitable acres managed for timber production.

2. Quality of habitats and wildlife and fish populations. The indicators are:

a. Population of catchable trout.
b. Population of elk.
c. Population of deer.

3. Road accessibility and the quality of roads. While mileage, costs, and construction standards are all indicators, road mileage and costs are too strongly correlated with the volume of timber harvested to be useful. Likewise, road standards are not useful because they are the same in all alternatives. Therefore, no indicators are suitable.

4. Contributions of the Forest to the economic development and way of life of nearby communities. Although no quantitative indicators reflecting ways of life are available, Chapter IV discusses the implications of the alternatives. The indicator of contributions to economic development are:

a. Number of Forest-dependent jobs.
b. Dollar income generated in dependent communities.
c. Payments to counties.

5. Areas to be managed as wilderness and semi-primitive recreation opportunity areas while meeting other demands. The indicators are:

a. Acres of wilderness areas.
b. Acres managed for semi-primitive recreation opportunities.

6. The level of livestock grazing while responding to other demands. The indicators are:

a. Number of AUM's permitted.

7. Protection of scenic values. The indicators are:

a. Acres in the visual quality classes of primitive, retention, and partial retention.

In addition, the nation as a whole has an interest in ensuring that this valuable Forest is managed in a financially prudent manner while the quality of the physical environment is protected and enhanced. Additional indicators:

a. Economic efficiency, as measured by present net value.
b. Cash receipts from management.
c. Budget costs to the taxpayers for management.

TABLE II-24
INDICATORS OF RESPONSIVENESS OF ALTERNATIVES TO MAJOR ISSUES AND NATIONAL CONCERNS
(Alternatives Ranked by Decreasing PNV)
(1978 Dollars Inflated to 1/1/82)

INDICATORS	UNITS	ALTERNATIVES							
		B	E	A	D	F	C	H	G
National economic concerns									
PNV	MM$	41.9	41.7	40.2	38.0	37.4	34.3	32.5	23.6
Benefits*	MM$	20.7	19.9	19.8	20.3	20.5	18.7	18.8	17.0
Cash receipts*	MM$	1.5	1.5	1.5	1.8	1.8	1.4	2.1	2.1
Budget cost*	MM$	7.6	6.8	6.2	5.5	6.5	4.1	6.5	7.4
Non-cash benefits*	MM$	19.2	18.4	18.3	18.5	18.7	17.3	16.7	14.9
Timber and road issues									
Allowable sale quantity*	MMBF	26.4	21.5	26.4	27.0	28.7	22.4	33.7	32.8
LTSY capacity	MMCF	8.2	6.0	8.2	8.3	7.7	7.7	8.1	7.5
Suitable Forest lands	M ACRES	302.4	187.7	302.4	310.7	312.1	276.9	310.8	309.6
Roads constructed*	Miles	30	11	30	17	19	16	33	26
Fisheries/wildlife issue									
Fish	M LBS.								
Decade 1		216	221	215	214	214	217	213	215
2		213	215	209	209	210	210	207	212
3		212	216	203	203	204	204	200	210
4		212	217	196	197	197	199	193	211
5		212	217	190	191	191	193	186	210
Deer	M NOS.								
Decade 1		51	52	51	41	41	41	41	52
2		53	56	53	53	52	48	50	55
3		53	56	53	52	52	45	49	55
4		53	56	53	52	52	45	48	55
5		53	56	53	52	52	45	45	55
Elk	NOS.								
Decade 1		1530	1530	1530	1530	1530	1530	1530	1530
2		2000	2300	1800	1800	1500	1500	1500	1900
3		2000	2300	1800	1800	1500	1500	1500	1900
4		2000	2300	1800	1800	1500	1500	1500	1900
5		2000	3000	1800	1800	1500	1500	1500	2200

INDICATORS	UNITS	ALTERNATIVES							
		B	E	A	D	F	C	H	G
Community effects issues									
Total dependent employment**	NO.JOBS	1576	1418	1429	1400	1285	1174	1489	1051
Total dependent income**	MM$	21.0	18.9	19.7	19.5	17.5	17.8	20.3	15.7
Payments to counties*	M$	383	386	382	453	447	348	524	524
Livestock Grazing									
Number of AUM's permitted	M AUM's								
Decade 1		115	90	115	115	117	110	122	119
2		115	90	115	115	117	107	130	120
3		115	90	115	115	118	105	133	121
4		115	90	115	115	118	103	136	122
5		115	90	115	115	119	100	139	123
Scenic Value Protection issue									
Preservation Class	M ACRES								
Decade 1		83	83	83	83	83	83	83	83
2		83	83	83	83	83	83	83	83
3		83	83	83	83	83	83	83	83
4		83	83	83	83	83	83	83	83
5		83	83	83	83	83	83	83	83
Retention Class	M ACRES								
Decade 1		850	854	850	850	830	852	831	849
2		848	851	848	847	806	849	803	844
3		844	848	844	844	780	845	773	838
4		841	845	841	841	753	844	743	834
5		839	843	838	837	725	841	710	828
Partial Retention Class	M ACRES								
Decade 1		629	642	629	626	606	633	607	623
2		617	630	617	614	570	625	566	603
3		603	622	603	603	531	617	521	581
4		591	612	591	591	500	603	476	562
5		578	600	578	576	450	592	426	542
Wilderness & development issue									
Wilderness acres	M ACRES	83	83	83	83	83	83	83	83
Managed for semi-primitive recreation	M ACRES	222	391	89	89	71	74	47	85

*Annual, first decade
**End of first decade

CHAPTER III
AFFECTED ENVIRONMENT

A. INTRODUCTION

This chapter describes the environment affected by the alternatives displayed in Chapter II. The chapter describes the physical and biological setting, the economic and social setting, and provides a summary of the current situation and demand trends for the Forest resource, support and protection elements.

B. PHYSICAL AND BIOLOGICAL SETTING

The Forest occupies almost two million acres, and stretches for about 170 miles across southern Utah. The largest National Forest in Utah, it straddles the divide between the Great Basin and the Colorado River.

Elevations vary from 2,800 feet near St. George, Utah, to 11,322 feet at Blue Bell Knoll on the Boulder Mountain. The southern rim of the Great Basin provides spectacular scenery. Colorado River canyons are made up of many colored cliffs and steep walled gorges.

High altitude forests in gently rolling hills characterize the Markagunt, Paunsaugunt, and Aquarius Plateaus. Boulder Mountain, one of the largest high elevation plateaus in the United States, is dotted with hundreds of small lakes 10,000 to 11,000 feet above sea level.

The Forest has many climatic extremes. Precipitation ranges from 10 inches in the lower elevations to more than 40 inches per year near Brian Head Peak. At the higher elevations, most of the annual precipitation falls as snow. Thunderstorms are common during July and August and produce heavy rains. In areas, August is the wettest month of the year.

Temperature extremes can be impressive, with summer temperatures exceeding 100° F near St. George and winter lows exceeding -30° F on the plateau tops.

The vegetation of the Forest grades from sparse, desert-type plants at the lower elevations to stands of low growing pinyon pine and juniper dominating the mid-elevations. At the higher elevations, aspen and conifers such as pine, spruce, and fir predominate.

C. ECONOMIC AND SOCIAL SETTING

1. Zone of Influence

The Dixie National Forests Primary Zone of Influence consists of the communities and counties in southcentral and southwestern Utah within and adjacent to the Forest that are influenced by Forest policies and decisions. It is comprised of six counties: Washington, Iron, Kane, Garfield, Piute, and Wayne. The State of Utah organizes counties into multi-county planning districts. The Primary Zone of Influence is located in two of these districts:

- The Five County Association of Governments (FCAOG), which includes Washington, Iron, Kane, Garfield, and Beaver Counties.

- The Six County Commissioners Organization (SCCO), which includes Piute, Wayne, Juab, Millard, Sanpete, and Sevier Counties.

Details on the population, economics, lifestyle, and community cohesion in the Primary Zone of Influence are included in Appendix B.

TABLE III-1
ECONOMIC INDICATORS, PAST TRENDS, AND BASELINE PROJECTIONS
FOR PRIMARY ZONE OF INFLUENCE

						Baseline Projections		
	1960	1970	1977	1980	1983	1985	1990	1995
Pop. (M pers.)	30,474	34,474	45,877	54,351	61,050	67,810	76,924	83,403
Income (MM$)		82.2	210.1	343.1	434.8			
Employment (M pers.)								
Agricul.		1973	1802	1792				
Lumber		253	291	252				
Retail		2156	3326	3449				

D. RESOURCE ELEMENTS

1. Recreation

The Dixie National Forest has unique recreation opportunities. The Forest is adjacent to or surrounds three National Parks and one National Monument. The parks and monument draw people into the area from throughout the United States and from other countries. Once in the area, the people often visit many areas on the Forest and use the campgrounds.

Major population centers within one hour of the Forest are Cedar City, St. George, Panguitch, Enterprise, Hurricane, and Escalante. The combined population of these and other smaller communities within the hour driving time is approximately 100,000 people. Many parts of the Forest are used by people from more distant communities, such as Las Vegas and Los Angeles. Private land adjacent to and within the Forest boundary has been developed and serves as summer home property.

The Recreational Opportunities Spectrum (ROS)* is highly diversified and includes camping, picnicking, driving for pleasure, downhill skiing, cross-country skiing, snowmobiling, hiking, hunting, and fishing.

a. Developed Recreation - Public

Cedar City and Pine Valley Districts, which are located adjacent to Interstate Highway 15, are the two most heavily used areas on the Forest. More than half of the use on these two districts comes from Nevada and California only 15 percent is from Utah.

Recreation use has increased steadily over the past 11 years. Some areas, such as along the Boulder-Grover Road, are expected to experience a greater increase in use. The Boulder-Grover Road recreation increase is due to the reconstruction of this road. This road will tie Bryce Canyon and Zion to Capitol Reef and other National Parks in southeastern Utah to passenger car traffic. The use on Cedar City and St. George Districts is expected to continue increasing, due to the continued development of summer homes on adjacent private land and the desire of people in large metropolitan areas to escape the crowds and heat. Some campgrounds are used in excess of their recommended capacity.

The number of major developed facilities, by ranger districts, is shown in Table No. III-2. Most use of developed facilities is during the summer months and fall hunting season. Some facilities along State Highway 12 to Bryce Canyon are used late into the fall and winter and early in the spring by visitors to Bryce Canyon.

TABLE III-2
NUMBER OF FACILITIES FOR DEVELOPED RECREATIONAL USE

Ranger District	Campground	Picnic	Overlook & Other
D-1 Pine Valley	7 (1)	3 (3)	3
D-2 Cedar City	10 (1)	1	6
D-3 Panguitch	2		1
D-4 Escalante	3	1	
D-5 Teasdale	4		
TOTAL	26	5	10

(Numbers in parentheses are group facilities.)

Most of the facilities on the Forest were constructed when tents were the major form of camping on the Forest. Since the trailer and motor home have evolved there has been resource damage due to the incompatibility of equipment being used with the facilities available at developed sites.

Some of the major campgrounds, roads, and spurs have been reshaped with to accommodate modern vehicles. Facilities such as tables, grills and pads need repair to meet the standards of roads and spurs. Across the Forest, vegetation has been badly trampled in developed sites. Compaction, loss of topsoil, development of trails, exposure of tree roots, and stream bank breakdown are all impacts degrading the appearance of picnic areas and campgrounds.

In recent years, operational levels of recreational facilities has declined because of reduced Forest Service budgets and the decline of human resource programs. The outlook for the next several years is for limited construction of recreational facilities. Current funding allows little more than minimal operation and maintenance.

The capacity of developed sites is measured in "people at one time" (PAOT). This is an estimate of the number of persons who can comfortably use a site at one time. Family camping and picnic sites are estimated to have a capacity of five persons per unit. The current capability of the Forest is shown in Table III-3.

TABLE III-3
PEOPLE AT ONE TIME CAPACITY OF DEVELOPED SITES

DISTRICT	CAMPGROUND	PICNIC	TOTAL
D-1 Pine Valley	1,005 (355)	390 (390)	1,395
D-2 Cedar City	2,790 (200)	20	2,810
D-3 Powell	680		680
D-4 Escalante	450	30	480
D-5 Teasdale	530		530
TOTAL	5,455 (555)	440 (390)	5,895

(Numbers in parentheses are group facilities.)

Developed recreation sites on the Forest contain old growth overstory with little understory vegetation. The overstory vegetation is susceptible to disease and insects due to its age. One area on the Cedar City District has recently lost most of its overstory aspen due to disease. Although the vegetation is coming back, the problem indicates a need to develop vegetative management plans for developed sites, to manage the vegetation to provide shade, and to increase the aesthetic appeal of the areas.

Other opportunities to improve developed recreation for the public include:

- Facilities resistant to vandalism.
- Limit use of developed sites to capacity.
- Attract visitors during mid-week, low-use periods.
- Rehabilitate substandard sites.
- Close and allow some sites to rest during slack periods.
- Emphasize development of new campgrounds and picnic areas.

More intensive use in the future will result in further overcrowding, additional site deterioration, greater wear on facilities, and increased social problems such as vandalism. The Forest expects to shift use to less crowded facilities at more remote locations and a small shift from weekend to weekday use. Projected use for developed sites is expected to exceed supply by about year 2010.

The projected use of developed recreation facilities on the Forest is shown in Table III-4. This use is based on these projected growth in population of the surrounding areas.

TABLE III-4
PROJECTED RECREATION USE BY DECADE

PLANNING PERIOD

1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
339 MRVDs*	528 MRVDs	740 MRVDs	1205 MRVDs	1963 MRVDs	3197 MRVDs

b. Downhill Ski Area

Brian Head is presently one of the fastest growing ski areas in Utah. It has grown from 33,400 skier visitor days in 1973 to 70,600 in 1983. The area is anticipating growth from nine to eleven lifts during the next few years. Crystal Mountain development is proposing to connect with Brian Head and increase the potential for expansion to 14 lifts.

Presently, the area is dependent on natural snow condition for the amount of use it receives.

Projected use for downhill skiing on the Forest from now until 2030 is shown in Table III-5. This use will exceed the existing capacity and the capacity for the proposed Crystal Mountain development by 1992 if the present growth rate continues. The growth rate will likely drop as the slopes become more crowded. The projected growth rate used for Table III-5 reflects the change in growth about 1995 from 28 percent to 5 percent per year.

Table III-5
PROJECTED USE IN THE PRIVATE SECTOR

PLANNING PERIOD					
1981-1985	1986-1990	1991-2000	2001-2010	2011-2020	2021-2030
259 MRVDs	426 MRVDs	1294 MRVDs	1812 MRVDs	2952 MRVDs	4809 MRVDs

Capacity of the downhill ski area on the Forest and its potential future capacity is shown in Table III-6.

TABLE III-6
PRESENT & PROJECTED CAPABILITIES FOR SKIERS
AT ONE TIME ON DOWNHILL SKI AREAS
1985-2030

Area	Present Capacity	Additional Planned Within Boundaries	Potential Additional Outside Boundaries	TOTAL
Brian Head	3200 SAOT*	1324 SAOT	2390 SAOT	3714

On most weekends during the peak season use of the ski area nears capacity. Holiday weekends are especially busy. Weekends are more popular because of work schedules, and also because of the distance involved for most of the users, who come from Nevada, California, and Arizona.

Brian Head, like most ski areas in Utah, is located up a narrow canyon. Access is often a problem during winter months when the road is snow packed. The State Department of Transportation is presently looking into possible solutions to the problem.

c. Developed Recreation - Private

Developed private recreation includes recreation residences, group organization camps, and other recreational opportunities provided by private enterprises under special use permit from the Forest Service. The following table summarizes private recreational activities on this Forest.

TABLE III-7
SPECIAL USE RECREATION SITES AND SITE USE

Sites	1980 Visitor Days	7-Year Acreage Increase Percent
2 Recreation Residence (43 residences)	5,600	N/A
2 Lodge Resorts	7,400	N/A
1 Organization Camp	5,500	N/A
4 Boat Marina	6,000	N/A

Recreation special uses paid fees of $17,540 in fiscal year 1984. There have been no new permits issued for recreation residences on the Forest since 1959. Originally, they were used only in the summer. Snowmobiles and four-wheel drive vehicles now make year around access possible.

Recreation use in the private sector has not shown an increase other than in skiing during the last ten years. Private sector has been operating at their maximum capacity for some time without expansion and there is no accommodations for the use. On the other hand, private residences have increased greatly on private land within and adjacent to the Forest boundary.

Some organizational camps have deteriorated and need substantial rebuilding to bring them up to satisfactory condition.

d. Dispersed Recreation

Dispersed recreation is use away from developed sites. Driving for pleasure is the most popular dispersed activity, followed by camping, fishing, gathering forest products, viewing outstanding scenery, hunting, and hiking. With the increase in fuel and heating cost, gathering fuelwood has increased 115% over the last three years. Driving for pleasure is expected to become more popular over the whole Forest. State Highway 14, and Boulder-Grover Road are presently being considered for scenic highway status by the State. The added publicity will increase their use.

Dispersed recreation areas receive intensive use on weekends and holidays, with areas near water being the most popular. Different types of users, such as snowmobilers and cross-country skiers, often compete for use of the same recreation area. The most heavily used areas, especially for fuelwood and snow play, are on the Cedar City District. The capacity of the Forest for dispersed recreation is calculated by using the Recreation Opportunity Spectrum (ROS).

The number of acres in each ROS class was converted to recreation visitor days (RVD's)*.

TABLE III-8
CURRENT CAPACITY FOR DISPERSED RECREATION
DIXIE NATIONAL FOREST

ROS CLASS	TOTAL ACRES	WILDERNESS ACRES	AVAILABLE ACRES	RVD/ACRE CONVERSION FACTOR	MRVD CAPACITY
Primitive	83,000	83,000	83,000	.3	25.8
Semi-Primitive Non-Motorized	831,309		831,309	.9	748.2
Semi-Primitive Motorized	645,797		645,797	2.8	1,811.4
Roaded Natural	237,747		237,747	12.4	2,948.1
Rural	10,869		10,869	12.4	134.8
TOTAL	1,811,722	83,000	1,811,722		5,668.3

Capacity for dispersed recreation is directly related to ease of access and facilities. The easier the access and the more available the facilities, the more opportunity for dispersed recreation. The Forest estimates that for every mile of new road construction (which is not closed after use) 118 acres of land will change from its classification as Semi-Primitive Motorized (SPM)* or Semi-Primitive Non-Motorized (SPNM)* to a Roaded Natural (RN)* classification. This will increase the capacity from 1.1 MRVD's to 1.4 MRVD's, depending on the acres of SPNM and/or SPM that will change to RN with the addition of one mile of new road.

The projected use for all types of dispersed recreation was predicted to increase as follows:

YEAR	1990	2000	2010	2020	2030
MRVD'S	843.1	1129.9	1841.1	2953.9	4811.7

Demand for dispersed recreation will never exceed the supply unless some unforseen population explosion takes place during the planning period.

The Forest expects the patterns of use to continue unless the economy changes. There will be some increase in the amount of use along the new high standard Forest Highway between Boulder and Teasdale. Use will continue to be high around Panguitch Lake, Navajo Lake, Duck Creek, Pine Valley, National Parks, and along major highways.

Timber sales and mineral development will increase use on Forest roads. Development will add additional miles to the Forest Road System. Some of these roads will be closed to motorized recreational use.

Heavily used dispersed campsites that continue to receive heavy use from hunters and fishermen will continue to deteriorate. Competition for choice sites will create social conflicts.

Opportunities for improving the dispersed recreation experience and reducing conflicts between user groups include:

- Developing a program for trailhead construction.
- Encouraging use at remote sites.
- Developing a program for all types of dispersed winter recreation.
- Providing adequate sanitation for both summer and winter use.
- Encouraging State and counties to provide parking and sanitation facilities for winter use.
- Develop a program to determine use in dispersed areas.

The following table shows the eight major dispersed recreation activities on the Forest and the average increase in use per year over a three year period.

TABLE III-9
VISITOR DAYS USE FOR SELECTED DISPERSED
RECREATIONAL ACTIVITIES
DIXIE NATIONAL FOREST
1983 AND AVERAGE YEARLY INCREASE 1980-1983

ACTIVITY	1983 VISITOR DAYS (MRVD)	AVERAGE YEARLY INCREASE 1980-1983 (PERCENT)
Driving for Pleasure	201.8	0
Fishing Cold Water	106.9	4
Gathering Forest Products	84.6	5
Viewing Outstanding Scenery	66.7	3
Hunting Big-Game	59.8	2
Skiing	45.2	3
Hiking	52.4	3
Horseback Riding	34.1	1

e. Trails

The Forest has approximately 637 miles of trails. The trail inventory lists 175 miles as adequate, 462 miles as inadequate, and 40 miles as planned but not constructed. The majority of the trails were constructed for fire access or livestock distribution. Recreation use of these trails has pointed out the need for some relocation. Many of the trails have also been damaged by timber sale operations and are badly in need of repair. Most trail use has been in the summer, but snowmobiles and cross-country skiers are increasing winter use. Two Forest trails on the Forest have received National recognition and status. Whipple Trail and Cascade Falls trails have both been designated as National Recreation Trails. There are no records of use for these two trails, but the use has increased over the past five years. Whipple Trail is one of the major access routes into the Pine Valley Mountain Wilderness.

f. Off-Road Vehicle Use

The Forest presently has 181,840 acres closed to all types of motorized vehicle use, 159,845 acres closed to motorized vehicle use except for snow machines, and/or on existing roads. These closures have been designated to protect an area from resource damage or wildlife habitat. Winter use on the Forest is becoming more popular as equipment becomes more available. The Markagunt Plateau which contains Brain Head ski area, and the Navajo Lake - Duck Creek recreation complex is one of the most popular areas on the Forest. Cabins in these areas are being used on a year around basis.

The development of the three and four wheeled All-Terrain-Vehicles is fast becoming a Forest concern. The development of these vehicles will likely increase the use of trails and general forested areas. Development of a plan to regulate use in critical areas is essential to present resource damage.

Cultural Resource

The lands administered by the Dixie National Forest, due to their general remoteness, have become a repository for much of the undisturbed evidence of the prehistoric and historic habitations in south central Utah. On the timbered ridges, and within the grass and sage-covered valleys of the Forest, the untold stories of ancient hunters, gatherers and farmers, as well as the tales of the pioneers, are silently awaiting an expression. To this end, cultural resource specialists are currently inventorying the thousands of archeological properties within the boundaries of the Dixie National Forest.

As directed by Executive Order 11593, all inventoried cultural resources are evaluated for eligibility for nomination to the National Register of Historic Places. Through December of 1984, 1,363 archeological sites have been recorded on 140,000 acres of Dixie National Forest system land. The occurrence of another 10,000 to 20,000 sites is projected for the remaining 1,740,140 acres of Forest.

Of the 1,363 archeological sites, three sites have been nominated to the National Register of Historic Places. They are the Mountain Meadows Massacre Site and Pine Valley Chapel and Tithing Office on the Pine Valley Ranger District and the Long Flat Prehistoric Quarry Site on the Cedar City Ranger District. In addition, two sites presently listed on the National Register are adjacent to the boundaries of the Forest. They are Old Irontown near the Pine Valley District and the Anasazi Indian Village State Historical Monument in Boulder, Utah.

In addition to sites formally listed on the National Register, many significant, potentially eligible prehistoric sites are found.

Significant and potentially eligible historic sites may be found among the Forest's various administrative facilities especially those from the Civilian Conservation Corps era. Candidates may include the following:

1. Vermillion Castle, Bear Valley, and Panguitch Lake guard stations; Cedar City Ranger District.
2. Aquarius and Wildcat guard stations; Teasdale Ranger District.
3. Dave's Hollow, Podunk and Jones Corral guard stations; Powell Ranger District.
4. Clayton and Jubilee guard stations; Escalante Ranger District.
5. Browse and Pine Valley guard stations; Pine Valley Ranger District.

According to the guidelines established by the USDA Forest Service (FSM 2361.02-2), 1990 has been established as the target date for the completion of the cultural resources survey and inventory of the Dixie National Forest. This target will not be met, as the complete survey of approximately 1,740,140 acres of Forest would take another 174 years based on a high annual survey average of 10,000 acres.

For the future, cultural resource inventories will continue to be conducted prior to any undertaking which could affect significant cultural values. As the rate of ground-disturbing activities (i.e., timber sales, fences, pipelines, chainings, etc.) increases or decreases, the rate of cultural resource survey and the recording and evaluation of new archeological properties will increase or decrease proportionately. Monitoring activities, which judge the effectiveness of site avoidance by project activity, should continue to be given a high priority.

The enhancement and protection of the Dixie National Forest's cultural resources, which is only minimally related to the degree of project work, should be pursued informally through the medium of public education. Cultural resource specialists, should take an active role in the development of an awareness by the public of the fragile and irreplaceable nature of their archeological resources. This can be accomplished by the presentation of slide talks to civic groups, the development of conservation programs for use with public school children, the publishing (i.e., newspapers) of the on-going accounts of area excavations, etc.

The Dixie National Forest has several opportunities to develop educational programs. The Escalante Ranger District enjoys close proximity to an established heritage center- Anasazi Indian Village State Historical Monument. Conceivably, the Dixie's cultural resource specialist could work with the curators at the Anasazi Indian Village to develop audio-visual (slide, video, etc.) programs for presentation to civic groups and school children in the towns where the Dixie National Forest has administrative offices.

The Supervisor's Office of the Forest is located in Cedar City, home of Southern Utah State College. The college, which has an established department of anthropology, offers a potential reservoir of candidates for cooperative student programs and/or volunteer projects. The cultural resource specialist should view the college as an available resource that could be, if nurtured properly, a mutually beneficial experience for the Forest and the student.

Student-oriented programs, for example, could be developed to aid in the stabilization and interpretation of the Anasazi dwellings in North Canyon on the Escalante Ranger District. Combining forces with interested local citizens, and guided by consultation with agencies such as the USDI National

Park Service, small scale projects could witness the stabilization of walls, the protective fencing of sites prone to vandalism and the establishment of interpretive signs.

The Forest's law enforcement program, which is formally charged with the protection of the cultural resources, operates on the premise that every Dixie National Forest employee has enforcement responsibilities. Ideally, the primary responsibility of the employee is to report any activity, initiated by the public or the agency, that is detrimental to cultural resources. And, in the past, cultural resource specialists have been informed of these activities.

At the notification of a cultural resource violation, the specialist then involves the appropriate Ranger District's law enforcement coordinator and the Forest's law enforcement officer.

Finally, the Forest has just recently introduced a new policy that would aid in the protection of significant cultural resources. When a property is nominated to and, subsequently, is accepted to the National Register of Historic Places, a plan of protection will be formulated within a year of the listing. This plan of protection may contain measures such as fencing, periodic patrolling and compatible multiple-use management.

Visual

The scenic beauty of the Forest is one of the major attractions to recreationists. Three National Parks and one National Monument surround or are found within the boundaries of the Forest. These areas are often the reason people come to southern Utah, however, many stay to see the Forests attractions and use the campgrounds.

An inventory of the visual resource on the Forest has been complete, using the visual management system outlined in "National Forest and Landscape Management - Volume 2."

The inventory showed the following acres in each visual management category:

	Acres
Preservation	83,000
Retention	854,000
Partial Retention	642,000
Modification	249,000
Maximum Modification	56,000

Special Areas

There are no scenic highways on the Forest at the present time. Highway 14 between Cedar City and Highway 89, and Boulder-Grover Road have been considered but no formal action has been taken. No research natural area have been designated. However, three potential areas are identified. These areas are: The Timbered Cinder Cone (640 acres), Table Cliff (1,235 acres) and Red Canyon (460 acres).

No streams meeting the criteria for wild scenic rivers as discussed in PL90-452 one located on the Forest.

The Forest evaluated four streams for possible designation as Wild & Scenic Rivers (PL 90-592). The streams evaluated were Deep Creek, Escalante River, North Fork of the Virgin River, and Paria River. The Paria and the Escalante start below the Forest boundary and a majority of the miles considered of the two remaining streams (Deep Creek and The North Fork of the Virgin River) are on private or BLM lands. Therefore, the Forest does not recommend any streams on the Forest for wild and scenic rivers status.

2. Wilderness

Prior to the Utah Wilderness Act of 1984, the Forest planning process had developed an inventory of lands that are essentially unroaded and undeveloped, meeting the minimum definition of wilderness, and qualified for wilderness evaluation per NFMA Regulation 219.17. The inventory contained 30 roadless areas, totalling 638,390 Forest-wide. This inventory and description of each area is filed with the Forest's planning records.

"The Utah Wilderness Act of 1984 designated 83,000 acres on the Forest as wilderness. It is estimated that these areas, in addition to areas that existed prior to the Act, will meet the anticipated demand for wilderness during the first planning period. At the ned of this period, and during Forest Plan revision, the need for additional wilderness will be evaluated. The total acres that are estimated to be available at that time is shown in Chapter IV."

TABLE III-10
CURRENT CAPACITY FOR WILDERNESS RECREATION
DIXIE NATIONAL FOREST

Area	Total	RVD/Acre Conversion Factor	MRVD Capacity
Pine Valley Mountains	50,000	.32	16.0
Ashdown Gorge	7,000	.32	2.2
Box-Death Hollow	26,000	.32	8.3
TOTAL	83,000		26.5

TABLE III-11
PROJECTED DEMAND FOR WILDERNESS

Year	MRVD	Acres
1986-1990	8.0	83,000
1991-2000	10.3	83,000
2001-2010	17.6	83,000
2011-2020	28.7	83,000
2021-2030	46.8	83,000

Based on these calculations, the supply of wilderness will meet the demand until 2013.

3. Fish and Wildlife

More than 350 species of wildlife and fish inhabit the Dixie National Forest for all or a portion of their life cycle. Consumptive and non consumptive uses of many of these species are an important part of recreation on the Dixie National Forest.

a. Management Indicator Species*

The National Forest Management Act (NFMA) requires Forests to select a group of representative wildlife and fish species. By monitoring their populations and habitat relationships, we can see the effects of Forest Service management activities on all the fish and wildlife of the Forest. On the Dixie, we have selected a group of 12 of these Management Indicator Species (MIS) (Table III-12).

TABLE III-12
MANAGEMENT INDICATOR SPECIES
FOR THE
DIXIE NATIONAL FOREST

Species	Vegetation Type(s)
Mule Deer[a/]	Grass-forb, sagebrush, mountain brush pinyon-juniper, sapling-mature aspen, sapling mature conifer
Rocky Mountain Elk[a/]	Grass-forb, sapling-mature aspen, sapling-old growth conifer
Wild Turkey	Mountain brush, pole-mature aspen, mature-old growth conifer
Goshawk	Riparian tree, mature aspen, mature-old growth conifer
Common Flicker	Mature aspen, mature conifer

* Denote terms found in the glossary

Species	Vegetation Type(s)
Yellowbreasted Chat	Riparian shrub-tree
Bonneville Cutthroat Trout	Headwater streams
Resident Trout[a]; Rainbow, Brook, Brown, Cutthroat	Streams, rivers, lakes, reservoirs
Macroinvertebrates	Streams, river, lakes, reservoirs

[a] High demand species.

Mule Deer. Mule deer are the most abundant big-game species on and adjacent to the Forest. Deer populations have been low in southern Utah for approximately ten years, but are now recovering strongly. It is estimated that with the current rate of deer population growth, and continuing current programs, the Utah Division of Wildlife Resources (UDWR) population objective of 53,500 deer summering on the Forest can be met by the year 2000. As shown in Table III-12, mule deer can be found in every habitat type on the Forest. Mule deer are valuable as a management indicator species because the distribution of forage and cover and other habitat factors required to maintain healthy deer populations will also insure provision of the habitat requirements for many other wildlife species.

Rocky Mountain Elk. Elk were selected as a Management Indicator species primarily because of the amount of public interest (both positive and negative) in them. There are three seperate elk herds established on the Forest. There is also some "drift" of elk, on occasion, to other areas of the Forest:

- Boulder Mountain. This herd is currently estimated to contain approximately 600 animals. The herd was established in 1977-78 with a 2-year transplant program of 159 elk. The Forest Service and the UDWR are presently preparing an Elk Herd Management Plan for Boulder Mountain and the Forest Service has come up with a tentative population objective of 1,000 elk for Boulder Mountain.

- Mount Dutton. This herd was established with transplants in the 1930's. The herd currently contains approximately 600 animals. There are some distribution problems with this herd, in that there is a moderate amount of habitat available on the west side of Mount Dutton that the elk are only partially using, while some areas on the east side of the mountain are sometimes overused. The Forest Service estimate is that a 700 head elk herd will be maximum for this unit.

- Panguitch Lake. This herd became established through immigration from other herds. It currently, has around 100 animals. The Forest Service estimate is that a herd of 300 head might be able to be established on this unit.

- Cedar Mountain. A relatively small area; (8 percent) of this herd unit is on the National Forest. Although this small herd has been established for about 20 years, evidence of elk use on the Forest is very limited. Few, if any, elk from this unit have ever been harvested on the Forest.

- Pine Valley Mountains. Elk and elk sign are occasionally observed on the east slopes of the Pine Valley Mountains. They probably drift there from the Cedar Mountain herd.

- Paunsaugant. A small herd of elk are occasionally observed on the Paunsaugant area. They probably drift to it from the Mt. Dutton area.

These figures indicate that there are approximately 1,400 elk using the Forest at the present time. The tentative UDWR population objective; taken from the Region 4 Wildlife and Fish Assessment Data Base (August 1981) is 2,900 elk by 1990. Firm population objectives will be developed in the near future (1985 or early 1986) when Elk Herd Unit Management Plans are completed.

Wild Turkey. Turkey have been transplanted on all Districts, with good populations existing until about 1973. Since that time, populations have declined, apparently being limited by periodic severe winters. The UDWR feels that in order to maintain a viable population, periodic transplants may be necessary. The most recent transplant was of 80 birds to the Pine Valley Mountains in February, 1983. The Forest's current turkey population is estimated at 230 birds. The UDWR population objective for the Forest is 500 birds. There is haitat for larger turkey repopulations than this objective implies. Turkeys were selected as an MIS because of their requirement for relatively undisturbed habitat containing old growth ponderosa pine. Even though the population is currently quite small, there is considerable public interest in the species.

Goshawk. Goshawks will serve as a Management Indicator for old growth conifer and aspen. They typically nest in large diameter trees in dense conifer stands or in stands of tall (40-60') aspen. UDWR does not have a population objective for this species. Data concerning population trends for goshawks on the Dixie is lacking, but review of past and current management activities in relation to goshawk habitat requirements indicates a stable population.

Common Flicker. The common flicker is a primary cavity nester and will act as a Management Indicator of adequate habitat for other cavity nesting and snag using wildlife. The UDWR has no population objective for this species. As with the goshawk, it is estimated that the population trend for flickers is stable.

Yellowbreasted Chat. Chats prefer brushy riparian ecosytems. They will serve as a Management Indicator Species for riparian areas. The UDWR has no population objective for this species. The small amount of data available indicates a stable population trend (over the short term) for this species.

Aquatic Habitat Indicators. Because of the variety of aquatic habitats on the Forest, a combination of Indicator Species will be used. The native Bonneville cutthroat trout will be the MIS in those streams which contain native or transplanted populations. Rainbow, brown, brook, or cutthroat trout will be used in most streams and lakes on the Forest. The most common species in a particular water body will be the MIS in that area. If fish population data is not available for a particular water body, the macroinvertebrate biotic condition index (BCI)* will be used to assess fish habitat capability.

The Current, Minimum Viable* and Maximum Potential Population* levels of the various MIS have been estimated and are displayed in Table III-13. Minimum viable populations are estimated assuming adequate distribution of the animals so that reproduction can occur.

b. Diversity*

The Dixie National Forest is an inherently diverse area. Elevations range from 2,800 to above 11,000 feet. The Forest borders the Mohave Desert on the west (near St. George). Less than 25 miles away, at the top of the Pine Valley Mountains, you enter a subalpine coniferous forest. Similar habitat diversity occurs throughout the Forest. Much diversity is provided by the various vegetation types occurring on the Forest, and the successional stages of these types. Table III-14 displays the approximate acres within the vegetation types, and is further broken down by the existing and estimated optimum percent of each type within each successional stage. This table shows that several of the vegetation types on the Forest are dominated by advanced successional stages. Manipulation of these types to more closely approach the estimated optimum (Table III-14) mix of successional stages could increase production while improving diversity.

c. Vegetation Types

The dominant vegetation types on the Forest are discussed in terms of quantity and quality as they relate to specific habitats for the MIS. Total acres in each type and approximate percent in each successional stage is shown in Table III-14.

Aspen. This type is potentially one of the most productive of forage on the Forest. Of 183 species of forest dwelling birds and mammals, 164 of them (89.6%) use the aspen type. Much of the aspen on the Forest is in a mature to decadent condition with little regeneration evident. A significant amount of aspen is also being lost to conifer invasion. Small clearcuts, burning, and/or herbicide treatment would improve the aspen age distribution and improve wildlife habitat within the type. Management indicator species making heavy use of aspen are: mule deer, elk, wild turkey, goshawk, and common Flicker.

Mountain Brush. Increased diversity in this productive type could be achieved through various methods of vegetative manipulation. Although community composition would not change significantly, a mosaic of different aged stands would result in improved vertical and horizontal diversity and forage production. Management indicators for this type are: mule deer and wild turkey.

Spruce-fir. This vegetation type is dominated by contiguous areas of mature uneven aged stands characterized by a sparse understory. Diversity could be improved by coordinating wildlife needs with timber harvest to create well distributed, irregular shaped openings and some open stands with brushy understory vegetation. The MIS most closely associated with this type are elk and goshawk.

Mixed Conifer. Opportunity exists to increase diversity in this type because of high productivity and the abundant tree and understory species present. The type is currently composed of a high proportion of older age classes with

TABLE III-13
CURRENT, MINIMUM VIABLE AND MAXIMUM POTENTIAL POPULATION AND ACREAGE ESTIMATES FOR MIS
DIXIE NATIONAL FOREST

Species	Indicator Habitat	Minimum Viable Population	Acres required for Minimum Viable Pop.	Existing Population	Acres Existing Habitat	Maximum Potential Population	Acres Potential Habitat	Habitat at 2030
Mule Deer	All	2,000	120,000	31,500	1,883,770	56,000	1,883,770	1,883,770
Rocky Mountain Elk	Aspen, Mixed conifer	360	230,676	1,200-1,300	800,960	3,000	1,019,346	910,000
Wild Turkey	Aspen, Ponderosa Pine	150	256,000	230	640,000	500	973,000	640,000
Goshawk	Mature timber	40 pairs	192,000	68 pairs	326,400	93 pairs	446,400	326,400
Common Flicker	Standing Dead	9,325 pairs	373,000	11,900 pairs	476,000	23,310 pairs	932,400	668,000
Yellowbreasted Chat	Riparian	726 pairs	5,900	1,210 pairs	9,800	1,815 pairs	14,666	9,800
Bonneville Cutthroat trout	Streams	4,000 fish	7	4,000 fish	7	2.5 MM fish	2,500	
Resident Trout	Lakes, Reservoirs above 10,000 Feet	8 lbs. per ac.	3,100	20 lbs per ac 1/	31,000	20 lbs/ac.	5,000	
	Lakes below 10,000 Feet	40 lbs per ac.		100 lbs per ac 1/		100 lbs/ac.		
	Reservoirs below 10,000 Ft.	20 lbs per ac.		50 lbs per ac 1/		50 lbs/ac.		
	Streams in sedimentary materials	32 lbs per ac	255	80 lbs per ac	250		400	
	Streams in Volcanic Materials	24 lbs per ac.		60 lbs per ac		120 lbs/ac.		
	Streams in granitic Materials	16 lbs per ac.		40 lbs per ac		80 lbs/ac.		
Macroinvertebrates	Streams	BCI = 70				BCI = 100		

1/ Except lakes with known winter kill problems.

little regeneration. Treatment to benefit wildlife would be similar to thatapplied in the spruce-fir. Management indicators most closely associated with this vegetation type are elk and goshawk.

Pinyon-Juniper. Approximately 50,000 acres of this type he been manipulated by chaining and seeding over the last 20-25 years. These chainings provide diversity and much needed forage, especially in the spring for big-game species. Only a few thousand acres of pinyon-juniper remain where chaining would be feasible, although manipulation by burning could be done on several thousand more acres. Mule deer make more use of this type than any other MIS.

Sagebrush. Chaining, burning, and spraying projects have been conducted on several thousand acres of sagebrush range on the Forest. The situation here is similar to the pinyon-juniper treatments, providing diversity and forage for big-game animals. Mule deer make more use of this type than any MIS.

Ponderosa Pine. Wildlife habitat diversity could be improved by harvesting timber using methods sensitive to the requirements of wildlife. Wild turkeys are closely associated with this type (especially in mature stands).

Riparian. This type, more properly referred to as a habitat type, may occur as a relatively narrow (by definition a minimum of 200 feet wide) strip along streams or as small patches around seeps or springs or along the shoreline of lakes or ponds. Riparian areas in good condition are naturally diverse; artificial manipulation is not likely to improve upon good condition riparian or wet meadow areas. Many of the riparian areas on the Forest are not, however, in good condition. Manipulation in the form of replanting with native vegetation (willows, Carex, etc.) and protection from livestock would help many of the poor condition areas recover. These areas attract many species of wildlife. Wildlife species diversity in good condition riparian areas is probably greater than in any other habitat. The yellow-breasted chat is the Forest's management indicator for the riparian type. This large wood warbler prefers riparian ecosystems with relatively dense tangles of willows or other shrubby species.

TABLE III-14
DIXIE NATIONAL FOREST SUMMARY OF PERCENT OF LAND AREA IN EACH SUCCESSIONAL STAGE OF EACH MAJOR VEGETATIVE TYPE

			Successional Stages1/							
Vegetation	Range		Existing				Desirable 2/			
Type	Type	Acres	Early	Mid	Mature	Over Mature	Early	Mid	Mature	Over Mature
Grass-Forb	1,2d, 2w,3	157.851	25	45	30	0	10	45	45	0
Sagebrush	4	221,662	10	15	75	0	10	15	65	10
Mountain Brush	5	136,254	1	0	99	0	20	20	50	10
Pinyon-Juniper	9	442,406	5	5	45	45	30	25	35	10
Aspen	10	105,792	5	5	45	45	30	25	35	10
Ponderosa Pine	6	209,672	25	30	35	30	40	25	25	10
Mixed Conifer	6	200,246	10	10	40	40	40	25	25	10
Spruce-Fir	6	111,751	5	5	40	50	40	30	25	10
Riparian		19,000								

1/ Timber inventory data on the Forest does not include sufficient information to derive estimates on successional stages. Information displayed here is based on field observation.

2/ Early through Mature successional stages required for mule deer and elk. Mature and over mature stages constitute important habitat components for other MIS.

d. Aquatic Habitat

The Dixie National Forest provides habitat for trout in over 3,100 acres of lakes and reservoirs and 400 miles of streams. The average habitat condition for fishery streams on the Forest is estimated to be 65 percent of optimum. Stream habitat is presently degraded in some areas by lack of streamside cover, high sediment loads, poor bank stability, and lack of pools. The average fish production for lakes and reservoirs on the Forest is estimated to be 70 percent of potential. Fish production in Forest lakes is presently limited by winter kills, fluctuating water levels, excessive aquatic vegetation, low nutrient levels, and competition from nongame fish.

Habitat condition in a number of lakes and reservoirs on the Forest is declining due to accelerated eutrophication.* Of particular concern is the declining quality of two of the Forest's largest lakes. Panguitch Lake is the Forest's largest and presently its most productive lake. Continued deterioration of water quality could reduce fishing quality in the near future. Navajo Lake, the Forest's second largest lake, presently experiences frequent winter kills which reduce its fish production potential.

e. Threatened, Endangered and Sensitive Species

Mammals. The Utah prairie dog (*Cynomys parvidens*) is a federally listed "threatened" species (recently downlisted from endangered). The species historically occurred in 9 Utah counties, with the total population exceeding 95,000 animals. Habitat modification and extermination campaigns reduced the distribution to 5 counties.

The Forest is presently cooperating with UDWR and other federal agencies in an effort to re-establish sufficient populations of prairie dogs on public land so that the species can be delisted.* The Forest has designated 11 transplant sites for prairie dogs. Some of these sites are currently occupied; the others are historic prairie dog towns. No critical or essential habitat has been formally designated for the Utah prairie dog.

Birds. The bald eagle (*Haliaeetus leucocephalus*) is federally classified as "endangered" and occurs on the Forest during the winter months. Bald eagles are commonly seen in winter along many of the lower elevation streams on the Forest where suitable roost trees are available. Essential habitat has not been identified on the Forest.

The peregrine falcon (*Falco peregrinus*) may occur on the Forest in the spring and summer. Peregrines breed at Zion National Park and at Bryce Canyon National Park. Peregrines are almost certainly hunting on the Forest. Some could be nesting on the Forest.

Fish. The Bonneville cutthroat trout (*Salmo clarki utah*) has been classified by Region 4 of the Forest Service as a "sensitive" species. The species occurs as a genetically pure strain in three streams on the Forest at present. The UDWR is planning to use these populations to provide transplant stock for other suitable habitat areas on and around the Forest.

Plants. Table III-15 lists plants found on the Dixie which are federally classified. Only one species; *Astragalus perianus* is officially listed by the U.S. Fish and Wildlife Service (USFWS) as threatened. This species is found in the vicinity of Mount Dutton at elevations around 10,000 feet. It is associated with mixed grass-forb and spruce-fir communities and grows in very shallow, rocky soils.

TABLE III-15
THREATENED AND SENSITIVE PLANT
SPECIES ON THE DIXIE NATIONAL FOREST

Scientific Name	Common Name	Family	Threatened	R-4 Sensitive	Utah Native Plant Society Recognized
Astragulus barnebyi	Barneby milkvetch	Fabaceae		X	
Astragalus lentiginosus var. ursinus	Bear Valley milkvetch	Fabaceae		X	
Astragalus limnocharis	Navajo Lake milk vetch	Fabaceae		X	

Scientific Name	Common Name	Family	Threat-ened	R-4 Sensi-tive	Utah Native Plant Society Recog-nized
Astragalus perianus	Rydberg milkvetch	Fabaceae	X		
Castilleja aquariensis	Aquarius paintbrush	Scrophulariaceae		X	X
Castilleja parvula var. parvula	Tushar paintbrush	Scrophulariaceae		X	X
Castilleja parvula var.	Reveal paintbrush	Scrophulariacae		X	
Cryptantha ochroleuca	Yellow-white catseye	Boraginaceae		X	X
Cymopterus minimus	Cedar Breaks Biscuitroot	Apiaceae		X	
Erigeron proselyticus	Cliff daisy	Asteraceae		X	X
Eriogonum aretioides	Widtsoe buckwheat	Polygonaceae		X	X
Gilia caespitosa	Rabbit Valley gilia	Polemoniaceae		X	
Heterotheca jonesii	Jones golden aster	Asteraceae		X	
Lepidium montanum var. neeseae	Neese peppergrass	Brassicaceae		X	X
Penstemon bracteatus	Red canyon beard-tongue	Scrophulariaceae		X	X
Penstemon parvus	Small Beardtongue	Scrophulariaceae		X	
Psoralea pariensis	Paria breadroot	Fabaceae		X	
Silene petersonii var.minor	Red Canyon catchfly	Caryophyllaceae		X	
Astragalus Henrimontanensis	Dana Milkvetch	Fabaceae			X
Festuca dasyclada	Sedge fescue	poaceae			X
Haplopappus zionis		Asteraceae			X
Hymenoxys helenioides		Asteraceas			X
Silene petersouii var. petersouii	Plateau catchfly	Caryophyllaceae			X
Sphaeromeria capitata		Asteraceae			X

f. Wildlife Outputs (Demand)

Table III-16 displays the current and projected outputs in Wildlife and Fish User Days* (WFUDS), assuming continuation of current programs. The wildlife resource is primarily a recreation type output. The demand for wildlife related recreation has increased in line with other types of Forest recreation, and is expected to continue this increase throughout the planning period. Under the Current Program, however, availability of terrestrial wildlife (primarily consumptive use) may only be able to meet increasing demand up to a certain point. Beyond that, decreased hunt success and quality of the experience may cause a leveling off of the terrestrial WFUD outputs as hunters choose to go elsewhere where success is better.

Demand for fishing on the Forest is expected to increase as the area's population increases. Overall dispersed recreation demand which includes fishing is expected to increase by 250 percent by the end of the planning period. During this same time period fish production on the Forest is expected to decrease due to continued degradation of lake habitat.

TABLE III-16
WILDLIFE AND FISH USER DAYS (WFUDS), CURRENT AND PROJECTED, ASSUMING CONTINUATION OF CURRENT PROGRAMS

Year or Decade	Terrestrial WFUDS Consumptive & Nonconsumptive	Aquatic WFUDS	Total WFUDS
1983	97,418	48,350	145,768
1984	107,932	48,350	156,332
1985	109,000	48,450	157,450
1990	122,314	48,760	171,074
2000	130,579	52,066	182,645
2010	130,579	51,240	181,819
2020	130,579	49,587	180,166
2030	130,579	47,934	178,513

g. Wildlife and Fish Habitat Improvement and Maintenance

Table III-17 shows the acres of habitat and number of structures that have been improved, constructed and maintained during the last 5 years. Accomplishments vary greatly from year to year, depending on funding available (PM, O&M, KV, etc.) each year. Lack of maintenance accomplishments from 1979 through 1981 is probably more a result of incomplete reporting than maintenance work not actually being done.

h. Wildlife Transplants* and Reintroductions*

A number of wildlife species have been established (or reestablished) on the Dixie by transplants or reintroductions. Rocky mountain elk and wild turkeys are the best examples. Mule deer have transplanted in some areas to supplement low existing populations. The Forest's pronghorn population on Parker Mountain is the result of an extremely successful transplant in 1964-1965, and that population is now the source for pronghorn transplant stock to other areas.

From time to time during the Planning Horizon, the opportunity to conduct transplants or reintroductions of certain fish or wild life species may occur. Some interest has been shown in the possible introduction (or reintroduction) of desert bighorn sheep in the Box-Death Hollow, the Canaan Mountain, and the Pine Valley Mountain areas. These proposals when submitted through formal channels will be acted upon on a case-by-case basis as per FSM 2640 and other appropriate sections of the Forest Service Manual.

TABLE III-17
WILDLIFE AND FISH HABITAT IMPROVEMENT AND MAINTENANCE, FY 1979 THRU 1984

Year	Terrestrial Acres	Terrestrial Structures	Aquatic Acres	Aquatic Structures	Maintenance Acres	Maintenance Structures
1979	781	113	100	10		
1980	466	131	125			
1981	833	23	22	17		
1982	268	7	7	15		
1983	542	17	5	25	60	18
1984	770	10	0	20	410	25

4. Range

There are 104 grazing allotments on the Dixie National Forest; 81 cattle and 23 sheep allotments. Approximately 20,000 head of cattle and their calves and 25,000 head of sheep and their lambs are permitted on the Forest. Table III-18 displays additional range management statistics.

TABLE III-18
RANGE MANAGEMENT STATISTICS, 1983
FOR THE DIXIE NATIONAL FOREST

Total Forest Acres	1,883,500
Suitable Range Acres in Allotments	685,793
Suitable Range Acres Outside Allotments	0
Good Condition Range Acres	262,090
Fair Condition Range Acres	312,992
Poor Condition Range Acres	110,711
Total Allotments	104
Cattle Allotments	81
Sheep Allotments	23
Permitted Cattle	20,000 + Calves
AUM's*	97,000
Permitted Sheep	25,000 + Lambs
AUM's	18,000
Total Grazing Capacity (AUM's)	115,000
Actual Grazing Use (5 year average)	112,000
Wildhorse Population	40-60 Head
AUM's	350
Recreation Use (Horses)	
AUM's	500

The Forest has only a portion of the livestock grazing that occurred during the late 1800's and the early 1900's. Severe overgrazing took place in many areas during that time. In the 1940's a program of livestock reductions, range reseeding and allotment management planning was begun.

Only a few downward adjustments in livestock numbers and/or season of use have been needed in the last ten years. In many cases, reductions have been avoided by accomplishing revegetation projects, developing additional water and/or modifying grazing systems. To date, approximately 142,000 acres of depleted rangeland on the Forest have been reseeded. For the most part, these seedings have been very successful and provide a large proportion of the forage consumed by livestock and big game on the Forest. Several hundred miles of fence have been constructed on the Forest boundary and within allotments to control livestock distribution. Hundreds of water developments have been constructed by the Forest Service to provide water to livestock and wildlife in dry areas.

Permitted use and Actual Use

Table III-18 displays the Permitted Use titled "Total Grazing Capacity (AUMs) and the Actual Grazing Use". Actual use over the last five years has average 112,000 AUMs; 3,000 AUMs below the permitted use. This has been primarily because of some permittee's taking non-use for personal reasons.

As of 1984, all of the 104 allotments on the Forest had an approved Allotment Management Plan (AMP). All of these plans are currently implemented. These plans have been, and will continue to be updated as the need arises. Range Analysis has been completed on all allotments. Table III-19 summarizes the Forest's range analysis data.

TABLE III-19
RANGE ANALYSIS DATA SUMMARY
DIXIE NATIONAL FOREST

Condition Class	Acres	% of Total
Good	262,090	38%
Fair	312,992	46%
Poor	110,711	16%

Suitable Acres by Trend

Trend	Acres	% of Total
Up	423,703	62%
Down	0	-
Stable	262,090	39%

Suitable Acres by Vegetation Type

Vegetation Type	Acres	% of Total
Grassland	129,205	19
Wet Meadow	4,781	1
Dry Meadow	10,820	2
Perennial Forb	568	1
Sagebrush	181,589	26
Browse	67,263	10
Conifer	126,649	18
Pinion-Juniper	70,377	10
Deciduous Trees	94,541	14
Total	685,793	

In addition to domestic livestock grazing, a wild horse herd of 40-60 animals grazed on the Forest for part of the year northwest of Enterprise, Utah. The herd moves between Forest Service and BLM administered lands, and a joint FS/BLM management plan has been prepared for the herd.

Noxious weed control on the Forest is directed primarily at Scotch Thistle (Onopordum acanthium) which has invaded southwestern Utah in the last few years. In addition, Musk thistle (Carduus nutans) and Canada thistle (Cirsium arvense) are also moving into the area.

The Forest management goal is to keep the range resource in an upward trend when it is in less than good condition, and in a static trend when it is in good condition. Maintaining this goal will result in continued improvement of the Forest's range resource. This does not mean that more AUMs will be produced, but that plant composition, ground cover, etc., will be improved. Livestock numbers, seasons of use and distribution will remain approximately the same throughout the planning period.

Demand Analysis

In terms of 1982 dollars the value of an AUM of grazing on the Dixie National Forest is $8.06. Fees that National Forest permittees pay has ranged from $1.35 to $2.50 per AUM over the last few years.

At the present fee levels charged for livestock grazing, the supply is fully utilized. It is not anticipated that this situation will change during the planning period. There are thousands of head of additional cattle and sheep on ranches adjacent to the Forest that ranchers would be willing to graze on the Forest if the opportunity was available.

Table III-20 displays the AUM outputs for the planning period, assuming continuation of current programs. For comparison purposes, the table also displays the Regional (RPA 1980) objective for the Forest and the maximum AUMs that could be produced with no constraints* on range management methods and techniques.

TABLE III-20
ANIMAL UNIT MONTH (AUM) OUTPUTS UNDER CURRENT PROGRAM
RPA 1980 FOREST OBJECTIVE AND UNCONSTRAINED RANGE MANAGEMENT
(All outputs in M AUMS)

	1985	1990	2000	2010	2020	2030
Current Program	115	115	115	115	115	115
RPA 1980 Objective	116	119	121	121	122	123
Unconstrained	115	119	124	130	136	142

Current and Potential Capacity

The current capacity, as discussed earlier and presented in Table III-18 is 115,000 AUMs. The initial preparation of Allotment Management Plans is complete on the Dixie. Many of the Plans have been in effect for 10 or even 15 years or longer, with the older plans having gone through at least one update. All plans have been in effect since 1984. This history of allotment management and planning has allowed us ample time for a "firm-up" period. An annual grazing capacity of 115,000 AUMs has received considerable trial on the Dixie.

Potential capacity, as discussed in Forest Service Handbook 2209.21.4.43, would be dependent on the amount and extent of forage improvement and water development accomplished for livestock. Table III-20 displays outputs that could be expected under three alternatives. The Feasibility Analysis discussion below presents more information on potential capacity.

Feasibility Analysis

The grazing capacity has essentially been determined on the lands classified as suitable for livestock grazing on the Forest under present climatic conditions and in coordination with the other existing land uses. Therefore, if livestock use is to be increased significantly it would have to be done through practices such as:

a. Climatic alteration - increasing precipitation on the arid rangelands.

b. Introduction of new forage species that will greatly out produce the species currently growing on the suitable rangeland.

c. Conversion of commercial timber producing lands to forage producing lands and making them suitable for grazing by developing water, etc.

d. Developing an economical means of converting steep mountain brush types, currently classified as unsuitable for livestock grazing, to suitable forage producing rangelands.

e. Changing classes of livestock from cattle to sheep on some of the allotments. (This proposal would be very unacceptable to many of the present cattle permittees.)

Since none of these practices are considered feasible or cost efficient at this time, the present and projected livestock grazing capacity for the Forest will need to remain as it is until there is a technical "breakthrough" in one or more of these items.

5. Timber

a. Land Suitability

Some 335,800 acres have been classified as available and tentatively suitable for timber production on the Dixie National Forest (Table III-21). This figure was determined in accord with regulations in 36 CFR 219.14 by the following procedure:

- Total net acres of the Dixie National Forest were classified as water acres and land acres.
- Land area was classed as either forest land (at least 16 percent currently stocked by trees or formerly stocked) or non-forest land.
- The initial regulations in 36 CFR 219.14 required that lands failing to meet the minimum biological growth standard of 20 cubic feet per acre per year set forth in the Draft Regional Plan be classified as unsuitable for timber production. This requirement was later dropped, and instead, these lands are now to be analyzed for their productive capability.

Some of the lands in question can produce marketable industrial products, but most cannot. These lands generally support unmarketable species or trees having poor form or they may have substantial areas of surface rock and rock cliffs. The value of products that could be sold is low, the cost of management would be high.

The shortage of time to judge growth response and obvious lack of economic productivity for most of these lands suggest that they should now be classified as unsuitable.

In lieu of immediate analysis, the Forest will gather information about the suitability of these low producing sites (less than 20 cubic feet of wood per acre per year) during the next scheduled Forest-wide timber resource inventory. After inventory data have been collected, land suitability will be analyzed in accord with 36 CFR 219.14. If the difference between the existing Forest Plan and the new analysis is significant, the Forest Plan may be revised in accord with 36 CFR 219.1 (g).

- Lands determined to be productive were judged for their availability for timber production. Lands "not available" are those potentially productive forest lands legislatively or administratively withdrawn from timber production. This classification includes wilderness, research natural areas, and administrative sites.

With the passage of the Utah Wilderness Act of 1984, some productive timber lands have become unavailable and appropriate acreage adjustments have been made.

TABLE III-21
LANDS AVAILABLE AND TENTATIVELY SUITABLE FOR TIMBER PRODUCTION
DIXIE NATIONAL FOREST

Land Classification

Classification	M Acres
1. Non-Forest land (includes water)	1204.9
2. Forest land	678.8
3. Forest land withdrawn from timber production-(not available)	28.5
4. Forest land not capable of producing crops of industrial wood	236.6
5. Forest land physically unsuitable: irreversible damage likely to occur;	82.5
not restockable within 5 years	0
6. Forest land - inadequate information 1/	0
7. Tentatively suitable forest land (item 2 minus items 3, 4, 5, and 6)	331.2
8. Forest land not appropriate for timber production 2/ (display acres by management emphasis)	31.1
9. Unsuitable forest land (Item 3, 4, 5, 6, and 8	378.7
10. Total suitable forest land (Item 2 minus item 9)	300.1
11. Total national forest land (items 1 and 2)	1883.7

1/ Lands for which current information is inadequate to project responses to timber management.

2/ Lands identified as not appropriate for timber production due to: (a) assignment to other resource uses to meet Forest plan objectives; (b) management requirements; and (c) not being cost efficient in meeting Forest plan objectives over the planning horizon.

b. Existing Situation

Description - Based on Approved 1975-85 Timber Management Plan. There are eight commercial timber species on the Forest. They are ponderosa pine, Douglas fir, white fir, Engelmann spruce, Colorado blue spruce, subalpine fir, limber pine, and aspen.

According to the 75-85 Plan, the Forest contains an approximate net board foot volume of 2,844,777 MBF*. An analysis was made of the commercial Forest land in the Forest to segregate acreages and volumes into standard*, special*, marginal*, and unregulated* components which generally reflect the influences of economics and associated resource protection constraints on management of the timber resource.

The 75-85 Plan shows the following data:

Stand Size	% of Total
Sawtimber	83
Poles	10
Seedlings/Saplings	6
Non-Stocked	1
	100%

Site Quality of Commercial Forest Land

Site Class	Production C.F.*/Ac./Yr.	% Of Total
Excellent	225+	0
Good	165 - 225	0
Medium	85 - 165	29
Poor	50 - 85	69
Very Poor	20 - 50	2
		100%

Area Data

	M Acres
Net National Forest Land	1884.5
Total Forested Land	1457.1
Total Productive Forest Land	609.6
Productive Deferred	30.9
Productive Reserved	-
Commercial Forest	578.7
Standard	309.4
Special	77.2
Marginal	190.3
Unregulated	1.8

Growth and Mortality - All Productive Forest Land

Gross Annual Growth (MBF)	Annual Mortality (MBF)	Total Net Growth (MBF)
44,395	10,860	33,535

Potential Annual Yield 1/

	MBF
Standard Component	17,175
Special Component	2,211
Marginal Component	10,040
TOTAL	29,426

1/ Potential annual yield. The average annual amount of commercial timber harvested during the 10 year planning period and that could be sustained in perpetuity under a specified intensity of management.

Programmed Average Annual Harvest 2/

	MMBF
Standard Component	18.7
Special Component	0.8
Marginal Component (Dead Spruce)	0.6
Unregulated	0.1
TOTAL	20.2

2/ Programmed Average Annual Harvest. That portion of the potential yield that is actually scheduled for harvest expressed as an average annual volume per year for the next ten year period.

Problem Situations Affecting Timber Harvest. A mountain pine beetle epidemic currently affects about 30,000 acres on the Forest. An accelerated harvest program is underway on the Escalante District to reduce the effects of this epidemic. A western spruce budworm outbreak affects about 45,000 acres on the Cedar City District. Other insect populations appear to remain at endemic levels. Dwarf mistletoe in Douglas-fir is an important disease problem occurring most seriously on the Powell Ranger District. Dwarf mistletoe causes significant losses to infected stands and eventual tree mortality. Dwarf mistletoe and limb rust occur in pockets of ponderosa pine scattered throughout the Forest. Recent surveys indicate that about 40% of all ponderosa pine stands on the Forest are infected with dwarf mistletoe. Porcupine feeding has created many unmerchantable and poor quality trees throughout the ponderosa pine type.

Until recent years, most timber harvesting was concentrated in the ponderosa pine type. Lesser amounts were harvested in the mixed conifer type. Early mixed conifer harvests were mainly selection and sanitation-salvage harvests with little emphasis on regeneration. Large areas of mature spruce-fir remain uncut. Seedlings, saplings, and poletimber are proportionately lacking in many areas of all timber types.

Policies, Silvicultural Systems, and Cultural Treatments. Dixie National Forest timber management policy is currently based on a broad classification of land use classes (LUC); Standard*, Special* and Marginal* as described in the 75-85 Plan.

Commercial Forest Land (CFL) must have potential to produce 20 cubic feet per acre per year. If growth potential is lower, land is classed as non-commercial.

Timber is currently managed with moderate to fairly intensive in the Standard LUC to the extent that management practices are compatible with other resource values and funding levels. Management objectives in the Special LUC relate to values other than timber production (e.g., visual quality, etc.).

Timber harvest is constrained in the Special LUC for visual quality or other stated objectives. Timber harvest has been limited in the Marginal LUC because of inaccessibility (excessive development costs), slopes too steep for tractor logging, excessive regeneration costs, or inability to regenerate the area within five years of harvest. Nearly all harvested timber has been from the Standard LUC. Limited cable logging has occurred on Escalante and Teasdale Ranger Districts during 1983 and 1984.

Prescriptions for stand treatment on the Forest have been based on the species and the particular area involved. The principles of even-aged and uneven-aged management are being followed, therefore, harvest practices ranges from clearcutting to shelterwood to the selection system. Some intermediate cutting is desirable to improve stand condition, utilize timber which may be lost through mortality and to make economic sale offerings. The application of modified cutting practices has been necessary in some areas to meet management objectives for the specific area.

Reforestation is a continuing practice where final timber harvest has taken place. Historically, plantation survival for all species has averaged about 50 percent. Seedling survival has increased during the last few years as the result of better site preparation, planting techniques, use of containerized seedlings and plantation protection. Reforestation backlog is being accomplished on schedule.

Precommercial thinning is also a standard recurring practice, mostly in ponderosa pine. Many thinned areas have not responded as well as expected. In the absence of a small roundwood market, areas thinned before 1980 may need a second precommercial entry to produce sawtimber within a reasonable time frame. Recent thinning applications using wider tree spacing have shown improved gains in diameter growth. These applications have shown similar gains in the Englemann spruce type.

Past Production. Following is a table of recent 10 years' production from the Forest:

READEX FICHE

TABLE III-22
PAST TIMBER PRODUCTION

Year (FY)	Sawtimber (MBF)	Aspen Cordwood (MBF)1/	Posts & Poles (MBF)	Fuelwood Commercial	(Cords) Personal Use 3/
1972	26.836	456	415	NA2/	NA
1973	16.424	1.026	145	NA	NA
1974	21.088	582	109	482	NA
1975	17.401	83	79	1.361	NA
1976	14.384	541	103	709	8.351
1977	21.826	1.147	126	1.545	29.182
1978	20.255	90	223	665	22.965
1979	17.722	40	86	1.004	32.637
1980	21.604	373	157	1.057	32.061
1981	18.389	207	303	1.066	28.348
TOTAL	195.925	4.545	1.746	7.889	153.544
AVERAGE	19.593	455	175	986	25.591

1/ The cordwood production of the Forest has been primarily aspen used for excelsior. The demand for this product is now less than in earlier years.

2/ NA - information not available.

3/ These figures reflect permitted removal. Actual removal may be substantially less.

Other ownerships and other National Forests contribute insignificant volumes to local mills.

Adjacent Landowners. Most adjacent and intermingled lands that support productive forests are privately-owned and are devoted to non-timber uses such as livestock grazing or recreation, including mountain subdivisions.

There are minimal conflicts with adjoining land and timber production on the Forest.

c. Current Management Direction

The current timber management direction is expressed in the 1975-1985 Timber Management Plan. Management direction is also further defined in the various planning unit Land Use Plans. Briefly stated, current timber management direction is to:

- Obtain optimum use of the timber resources.
- Offer for sale the full potential yield of the standard and special components.
- Assure timber harvest is compatible with all other resource values.
- Reforest nonstocked areas and increase stocking on understocked areas.

- Improve the quality and/or growth rate of immature timber stands through timber stand improvement work.

d. Future Conditions if Current Direction is Continued

Long range objectives for timber management in the 75-85 Plan include achieving a balance in the distribution of age classes. However, if current direction is continued, this balance would not be reached until the year 2216, for ponderosa pine and mixed species in the Standard Component and the year 2056 for aspen in the Standard Component.

The following tabulation shows information from the 75-85 Plan on size class distribution within all the Commercial Forest Land acres:

Size Class	Year 1975	Year 2030
Seedlings/Saplings	6%	14%
Poles	10%	29%
Sawtimber	83%	57%
Non-Stocked	1%	-
TOTAL	100%	100%

By the year 2030, under current management direction, many acres of Commercial Forest Land would remain unharvested - including essentially all of the marginal component.

The following is the likely flow of timber outputs to the year 2030 if current direction (from the 75-85 Plan) is continued:

FY	Average Annual Offerings (MMBF)
1981	33.1
1982	28.8
1983	25.8
1984	25.4
1985	24.3
1986 - 1990	23.0
1991 - 2000	20.2
2001 - 2010	20.2
2011 - 2020	20.2
2021 - 2030	20.2

(Note: Offerings through 1990 reflect accelerated sale efforts to control mountain pine beetle in ponderosa pine.)

e. Demand Analysis

Discussion. All of the sawtimber from the Dixie National Forest is purchased and manufactured locally. The local communities - Panguitch, Escalante, and a few smaller communities largely depend on the forest products for their economic base. Market areas served by local manufacturers include southwest markets and areas as far east as Pennsylvania. The Forest has offered a steady supply of forest products to provide for economic and social stability in these dependent communities. Receipts from timber sales returned to the counties have aided in programs such as schools and roads.

The present slump in the building industry nationally has resulted in a temporary decline in timber demand. Wholesale values for manufactured wood products from the mills are down, and labor and fuel costs are increasing.

Long term growth of population and the economy in the regional marketing area should sustain an increase in the demand for Dixie National Forest sawtimber. Within reasonably expected output levels, there will be a demand for Dixie National Forest sawtimber in excess of supply.

The Forest does not have a roundwood market for paper production. Aspen is being sold periodically by the cord for the manufacture of excelsior. This limited demand is expected to fluctuate and possibly decrease. Aspen has been harvested on a very limited basis by Kaibab Industries and a couple of smaller mills as sawtimber. The current demand for aspen is significantly below the potential yield. An opportunity exists for utilization of aspen and conifer roundwood for flakeboard, waferboard or similar products.

There is a demand from local ranchers and residences for some posts, poles, rough-sawn corral boards, and cabin logs. The demand for posts, poles, and corral boards has been fairly constant over the past several years. The demand for cabin logs is increasing with the development of summer home areas in and around the Forest.

The demand for fuelwood showed a substantial increase in 1977. This was probably due to the sharp increase in fuel oil and electric rates. The impact of this demand was felt the hardest by the Cedar City and Pine Valley Districts. The demand centers are from Cedar City and St. George, Utah and Las Vegas, Nevada. There are a substantial number of people that travel from southern California to the Forest for a recreation experience and return home with a load of fuelwood. Figures for 1981 show a decrease in demand for personal use permits.

No significant differences are foreseen between Regional and Forest demand trends.

Estimated Mill Capacity. Two major purchasers of sawtimber on the Forest are Kaibab Industries and Escalante Sawmills. Several small purchasers operate on the Forest on a part-time basis. Local sawmills depend virtually completely for their sawlogs from National Forest land. The current maximum annual capacity is estimated to be:

Kaibab Industries	30 MMBF
Escalante Sawmills	20 MMBF
Small purchasers	5 MMBF
TOTAL	55 MMBF log scale

Currently, local sawmills are operating well below their maximum capacity.

Historical Cash Flow Analysis of Timber Sales. Recently an issue has surfaced concerning the economic implications of National Forest System timber sales in which receipts do not recover costs (below cost sales). To study the "Cash Flow" of the forest's timber sale program a comparison was made of those years in which the sum of timber sale receipts (selling value(1), high bid) were less than the sum of the related costs.

As discussed in Chapter II of this document, there are many anomolies associated with the traditional Forest Service financial accounting system, for example, joint costs and benefits, capital investments amortization, and nonmarket values. To compensate for these anomolies the study did not include all direct costs, as defined in 36 CFR 219.14(b)(2). Specifically, the study examined timber sale-related costs, excluding road construction and general administration costs.

The results of the study is displayed below:

DNF
CASH FLOW ANALYSIS*
1980-1984

	1980	1981	1982	1983	1984	AVERAGE
Timber Volume Offered (MMBF)	+22.0	+26.0	+31.0	+28.0	+29.3	+27.3
Timber Volume Sold (MMBF)	+18.1	+25.2	+10.6	+27.9	+29.3	+22.2
Value of Volume Sold (M$)	+139.4	+146.4	+49.5	+349.1	+372.9	+211.5
Total Costs (M$)	+335.7	+520.7	+447.6	+430.1	+584.7	+463.8
Cash Flow (M$)	-196.3	-374.3	-398.1	-81.0	-211.8	-252.3

*All data from "Cut & Sold Report"
Expressed in 1982 dollars

The preceeding table is not an economic analysis. See Chapter II, page II of the D.E.I.S. for a discussion of economic criteria and other benefits used in evaluating alternatives.

6. Water

a. Water Quantity

Water from the Dixie National Forest represents one of the most valuable commodities in southwestern Utah. A significant portion of the water yield in this "water-poor" region of the state is produced in the high elevation areas of the Forest. However, the total water yield is low compared to other Forests in the region, amounting to an annual average of 481,000 acre-feet or about 3 inches per acre. Average water yields over 12 area inches occur on only four percent of the Forest. The Dixie National Forest is near equally divided between the Colorado River Basin and the Great Basin in both area and water production. Approximately 224,000 acre-feet of water yield occurs in the Colorado River Basin.

b. Water Quality

The quality of waters on the Dixie National Forest is an important management concern. Past water quality monitoring has not indicated any significant degradation of water quality due to management activities. However, many streams originating on the Forest have naturally high sediment concentrations by the time they reach the Forest boundary. This is especially true for those streams flowing through areas with highly erosive soils and outcrops of certain sedimentary rock strata. Most of the sediment load is delivered to the channel during flash flood events. These conditions, combined with often highly erratic flow regimes, limit the aquatic community development of many stream reaches. Most water quality monitoring has occurred in the higher value waters where potential for significant degradation from management activities exist. Although these reaches generally meet State water quality standards, there is still concern that sediment producing activities may degrade them below their biological potentials. Road construction, timber harvest and grazing in riparian areas all tend to increase the sediment loading to streams and lakes. Mitigating measures are employed in resource development activities to ensure that this degradation does not reach unacceptable levels. An exception to the general rule of no significant human-caused water degradation exists at Panguitch Lake. This heavily used recreational resource is experiencing an accelerated eutrophication* rate which may ultimately cause serious impairments of its fisheries and aesthetic values. This drainage which constitutes 20% of the total water yield on the Forest, is the only one on the Forest which cannot be shown to generally meet state water quality standards. A cooperative program is now underway to reduce the nutrient inputs to the lake.

c. Special Conditions and Situations

Hazard areas with potential to degrade water quality on this Forest are associated with erosion concerns. These hazards are described in the Soils Section of this Chapter. An additional hazard occurs in the East Fork of the Sevier River. Unstable streambanks in this drainage have resulted in excessive sedimentation and loss of fisheries values. This stream is sensitive to factors that promote further destabilization.

d. Flood Prone Areas

Intense thunderstorms, occurring from July through September, account for most of the summer precipitation in southern Utah. These summer storms can produce severe flash flooding in numerous dry washes, alluvial fans, and many perennial streams across the Forest. Few drainage bottoms on the Forest are immune to flash flooding. Some of the larger streams which originate in the higher elevations of the Forest (e.g., Santa Clara River, Panguitch Creek, Mammoth Creek, and the East Fork of the Sevier River) are subject to more extensive and prolonged flooding during the spring snow melt period. The primary flood hazard areas for this type of flooding are off-Forest in the communities and agricultural lands along the streams.

e. Water Storage and Transmission Facilities

Most of the water yield occurs during the spring and early summer months when the winter snowpack melts. Snow melt usually commences before the irrigation season. Stream flows are much reduced during the late summer. Consequently, those drainages with storage facilities are capable of providing a more constant and reliable supply of water. The water resources of the Forest have been extensively developed through the construction of numerous storage facilities, diversion structures, and ditches. There are approximately 70 reservoirs on the Forest. Most of the streams on the Forest either have diversions or impoundments within the Forest boundary. None of the existing facilities are perceived as detrimental to the multiple use management of the Forest . However, there are currently at least two water transmission facilities with associated erosion problems needing correction. Some of the impounding structures on the Forest currently have structural deficiencies requiring correction to meet Federal or State safety standards.

f. Water Uses - Consumptive

Most of the consumptive water use occurs off-Forest. The primary uses are for irrigation and culinary water supply in the alluvial valleys below the forested lands. At present the amount used for mining and industrial operations is minor. This situation may change in the future if the considerable energy reserves of southern Utah are developed. Eleven communities in southern Utah obtain at least part of their municipal culinary water from spring sources within the Forest boundary. Municipal watersheds have been designated for seven of these community systems located on National Forest land. They are Brian Head, Enterprise, Escalante, Panguitch, Parowan, St. George, and Teasdale. Management emphasis in these areas is for protection of water quality at culinary sources. Federal consumptive uses on the Forest are minor in quantity but very important to the management of the Forest. Domestic use at administrative sites and in campgrounds, and livestock and wildlife watering are the primary consumptive uses.

g. Water Uses - Non-Consumptive

Instream flow represents an important non-consumptive use of water for the Dixie National Forest. Instream flow needs include maintenance of fisheries, riparian ecosystems, recreational uses and stream channel integrity. These instream uses generally do not conflict with other uses of the water since most consumptive uses occurs off-Forest. However, in recent years there has been considerable interest in diverting small streams on the Forest for small-scale hydropower projects. Although non-consumptive, this use often presents serious conflicts with the management of other resources dependent upon the availability of surface waters. The Forest has initiated a program to identify instream flow needs for multiple use purposes. This program has been completed on approximately 30 percent of the streams on the Forest. When environmentally compatible with management objectives for an area, new permits to divert surplus water may be issued. In all cases, weighing net public benefits of diversion or storage projects versus instream flow values will play an important role in the decision making process.

h. Riparian Areas

Riparian areas are recognized as unique, high value, hydrologic-biotic components of the Forest resource base. They are quite limited on the Dixie National Forest. Riparian areas account for only one percent of the total Forest land base. Management activities within these areas must comply with Executive Order 11990 on Protection of Wetlands. The condition of some riparian areas is currently below potential due to overuse by permitted livestock. This situation represents some degree of difficulty to rectify; however, over the long term, conditions of the riparian areas should progressively improve.

i. Demand

In southern Utah, the demand for water currently exceeds the existing supply. No reduction in demand is foreseen for future years. However, the mix of water uses will probably change with agriculture use becoming less with more water going to municipal, industrial, and minerals development uses. Any increase in water yield from the Forest, now or in the future, would undoubtedly be utilized by the surrounding or downstream water uses. The opportunities to increase water yield are limited. The primary means to improve water yield on the Forest include vegetative manipulation and cloud seeding. Vegetative manipulation opportunities include emphasis on clearcut harvest in aspen and patch/strip clearcut in spruce-fir and mixed conifer stands. These activities could be carried out on a maximum of 61,625 acres of timberland to augment water yield by approximately 4,000 acre-feet per year when measured over the rotation age of the timber stands. This amounts to a 0.8 percent increase over current levels. A cooperative cloud-seeding program of the State of Utah and several local governments has been carried out in recent years in the mountains of southwest Utah. Preliminary results indicate a positive response to the cloud-seeding effort.

There is very limited opportunity to meet significant demands for non-consumptive water uses such as hydroelectric power generation. Most of the economically justifiable reservoir sites have already been utilized. The remaining unimproved streams on the Forest are small. It would be difficult to economically develop these streams for hydropower purposes without seriously impacting other multiple use values.

7. Minerals and Energy

Minerals exploration and development activities are directly related to the interest generated by the general public and industry. Management of this resource is responsive to these public interests along with industry interest in coordination with various other public agencies and resources. For these reasons, the minerals resource poses programming and scheduling problems that are not common with management of other resources.

Satisfying demand for locatable minerals is the responsibility of the mining industry. Public domain land is available for mineral exploration and development under all applicable laws and regulations. For leasable minerals the Department of Interior leases tracts for development by the mining and oil and gas industries. Saleable minerals are the only type of mineral commodity for which the Forest Service can directly affect the supply by selling common variety mineral materials to individuals and private industry. The Forest Service uses some common varieties for In-Service use.

a. Acres Available, Capable, Suitable

Availability. In accordance with the Federal Land Policy and Management Act of 1976 (FLPMA), the Forest Service must consider that all National Forest System lands are available for mineral exploration and development unless they are withdrawn from mineral entry and leasing.

The Dixie National Forest contains lands which restrict minerals activity by formal land classification. These restrictions are shown in the following Table No. III-23.

Valid existing leases can still be developed in the three Dixie National Forest Wilderness, but establishment of new leases is prohibited.

Congress withdrew from mineral entry approximately 5,000 acres of National Forest system lands on adjoining areas outside the official Box-Death Hollow Wilderness boundary. However, these same lands were left open to carbon dioxide leasing.

Existing withdrawals will be reviewed for continuation, modification or revocation prior to 1991, as directed by FLPMA. The review schedule may be found in the Appendix section of the Forest Plan.

In summary, 1,781,779 acres are presently available for mineral leasing and 1,773,319 acres are available for mining entry. This is 95 percent and 94 percent of the Forest, respectively.

Capability. The Forest Service does not determine which areas are capable of mineral or energy production. This determination is largely a function of private sector interest and pursuit. The entire Forest is recognized as an attractive resource, for mineral and energy potential. However, the dynamics of economical and technological factors limit the development of predictions beyond the recognition of this resource potential.

Suitability. All of the legally available land on the Forest is suitable for exploration and development of minerals provided that those activities can be limited by protective clauses and requirements to protect other resources.

Land management planning encourages or discourages minerals/energy activity by imposing restrictions on access to public lands. These restrictions are expressed through stipulations to mitigate potential adverse effects to other resources. These range from total withdrawal from leasing, through No Surface Occupancy lease stipulations, special lease restrictions, down to the most permissive case which contains standard lease stipulations. The mix of acres in each category of restriction will change according to the Forest Plan alternative being considered.

Development of oil and gas and other minerals may be further restricted by limitations in permits to drill, and approved operating plans. Such restrictions can be imposed to protect wildlife, soil, steep slopes, water quality, visual and cultural resources and other environmental factors.

Another consideration relating to suitability is the provisions of the Surface Mining Control and reclamation Act (SMCRA). This Act provides for the application of Department of Interior criteria to determine suitability of certain National Forest coal lands for surface mining. These criteria were applied to 39,980 acres of coal lands on the Dixie National Forest these acres were determined to have high or medium coal development potential or be under existing preference right lease applications (6). The results: ten acres were classified as suitable/available for coal strip mining, and the rest of thestudied area classified as available for coal leasing (where surface operations and impacts are considered incident to an underground coal mine). Any leasing of potential coal lands outside of the study area will require application of the standard USDI criteria prior to leasing.

A special management situation was created under authority of 522 (c) and (d) of SMCRA by a Secretary of the Interior decision December 16, 1980. Effective that date, certain lands adjacent to Bryce Canyon National Park were declared unsuitable for all types of surface coal mining operations, including some land on Dixie National Forest. The decision classifies 27,781 acres of National Forest lands adjacent to the Park as being unsuitable for surface coal mining, including surface impacts incidental to underground mining which would be visible from the Park. Another 7,782 acres of National Forest lands northeast of the Park were classified by the same decision as unsuitable only for mining by surface methods.

b. Current Management Direction and Situation

General Direction. The current management direction is to integrate the exploration and development of mineral and energy resources within the National Forest System with the use and protection of other resource values. Accordingly, mineral resources are treated as a resource on the Dixie National Forest. A basic difference however, is that, contrary to other resources, mineral development is initiated and carried forth by private interests. Minerals considered a non-renewable resource, is treated with special consideration for rehabilitation of disturbed areas. Current direction regulates mineral activity in sensitive areas where other values and uses must be recognized and protected.

All minerals owned by the United States available for exploration and development are subject to disposal under one of these three categories--locatables, leasables or saleables.

For Locatable Minerals, any person proposing to conduct operations that might significantly disturb a surface resource must file a Notice of Intent with the District Ranger.

Permits, licenses, or leases for Leasable Minerals (i.e. oil, gas, coal, geothermal on all Federal lands and hardrock minerals on aquired lands) are issued by the Department of Interior. The Forest has opportunity to perform environmental analysis, recommend action, list stipulations, and propose requirements for rehabilitation. For coal, geothermal, and all minerals on acquired lands, the Forest Service has authority to consent to or deny permits, licenses, and leases. For oil and gas proposals, on public domain lands, the Forest Service has the authority to make recommendations to the USDI which has the ultimate responsibility for a decision on leasing.

Saleable Minerals are managed by the Forest Service. Permits are issued for use of these materials in accordance with Forest Service policy, and are kept on file at the Supervisor's Office.

Current Situation.

Locatables. Approximately 5000 claims exist on the Forest. Assessment work is kept up on many of these; but, there is only minor exploration and development of locatable mineral resources at this time. Because of a depressed market there is little production. An operating plan to remove 20,000 tons per year was received for an open pit gypsum mine on the northside of Boulder Mountain, and mining began in 1984. A gold strip mine is being developed on private land within the Forest near New Harmony, with 22 lode and placer claims being located on adjacent NFS lands. A road-use permit to cross NFS lands provides access to the operation. The Forest Service, State of Utah, local communities and miners are cooperating to ensure orderly development occurs. A comprehensive plan reflecting the concerns of these interests will be prepared should the operation expand to NFS land. A Notice-Of-Intent to Operate has been received for work on silver claims in the Leeds area. Throughout the Forest other claims have been located for uranium, limestone, iron, silicasand, building stone, and jasper; however, there has been no recent activity outside of annual assessment work.

Leasables. The Dixie National Forest has been rated for potential development of oil and gas, coal, and geothermal resources. Data used to determine geologic potential was furnished by industry, the Department of the Interior, and the Forest Service. The potential for oil and gas ranges from low on the west side of the Pine Valley District to high on all of the Escalante and Teasdale District.

About 800 oil and gas leases exist on 75 percent of the Forest. Annually, 100 to 200 new applications for oil and gas leases are processed, between 10 to 30 geophysical prospecting permits are issued, and one or two wildcat exploration wells are drilled. Currently, the rate of geophysical prospecting is low, but drilling wildcat wells and leasing is increasing. Increased use of improved seismograph techniques and equipment throughout the Forest during recent years has yielded better quality data than was obtained in the past. This improved data stimulated extensive drilling in Southern Utah along the Overthrust (overthrust belt passes through the Forest), in the Hingeline, in the Kaiparowits Region, and along key faults and anticlines. Many of the dry wells drilled showed oil present, but not in economically attractive quantities or quality. Exploration recently was conducted at a high rate between Antimony and the Tropic Reservoir area for oil and gas.

The Forest has a producing oil field at Upper Valley. This field, developed in 1964, currently has 23 oil wells which produce in excess of 1300 barrels of oil per day. About 21 million barrels were produced through the end of 1985. This field also has nine injection wells and one temporary shut-in well. Two more oil wells were drilled in the field in 1985. The field has been stimulated to an unknown degree of success, by using recovery-enhancing polymers. The production records seem to fluctuate, possibly as a function of supply and demand and the price of oil. The oil field operator worked cooperatively with the BLM and USFS in late 1983 and early 1984 to prepare a comprehensive surface protection and reclamation plan for Upper Valley Oil Field. The BLM estimates the field has about 20 years of life left.

Through the cooperation of the oil company an abandoned oil well drilling site on the Teasdale Ranger District was converted to a developed trailhead for recreationists in 1984.

Carbon dioxide (CO_2) has been discovered on National Forest System land in several locations. A well drilled in the Sand Creek drainage, on the Escalante Anticline, in 1983, yielded 124 million cubic feet of CO_2 gas per day at 100 lbs per square inch. The operator/lessee estimated the total CO_2 resource in the field to be 1.3 trillion cubic feet, possibly the largest CO_2 field on the continent. In 1984, one additional well was drilled in Sand Creek, and it, too, yielded CO_2. In late 1984, a third well was drilled for CO_2 on Antone Ridge between the Box-Death Hollow drainages. The third well was said to be needed to confirm the volume of CO_2 in the field, and to determine whether the CO_2 field is economically feasible for development. At this writing, that well has been completed, and the company is analyzing the data obtained. If the project is economically feasible,then the concerned lessees will probably unitize and submit a comprehensive plan for full development of the CO_2 field. A market for CO_2 may exist in either CO_2-enhanced oil recovery in depleting oil wells, and/or in coal-liquified CO_2 slurry pipelines. There is a possibility CO_2 from the Escalante Anticline area could be used in the depleting Upper Valley Oil Field for enhanced oil recovery, or in the transportation of coal from Kaiparowits and Alton coal fields.

Coal resources extend onto the Forest in four fields. Much of the coal is covered by more than 3000 feet of overburden, making it unavailable. In addition, much of it is of a quantity or quality that makes it uneconomical for industrial development. Commercial opportunities on the Forest exist in the Alton and Kaiparowits fields, where the quality of the coal is generally very good. Interest in coal development has been restricted by lack of market and isolation of the resource. On the Forest there is one existing 40-acre coal lease and 3 old coal mines, but no mining has taken place since the 1960's. The Forest has six preference right coal lease applications (PRLAs) pending on the Escalante District. These involve approximately 20,000 acres of National Forest land. During 1983, a study was completed which employed the Department of Interior's coal unsuitability criteria for the high and medium potential coal lands (technical data was furnished by USDI) to determine which National Forest lands can be made available for surface coal mining. The results of that study can be found in the Appendix. Upon completion of the Coal Unsuitability Study, two environmental assessments were prepared by the Forest for the six preference right coal lease applications. These were in the draft stages when the BLM stopped all work on an EIS being prepared for all Preference Right coal lease - application areas in Utah. The EIS preparation was suspended by the BLM because the Appropriations Act prohibits leasing activity in a Wilderness Study Area; one of the areas involved was a WSA on BLM lands.

There have been a variety of proposals to develop the two billion ton Alton field and 15 billion ton Kaiparowits field. These proposals have stimulated considerable controversy due to their proximity to Bryce Canyon National Park.

Development of all coal is in a dormant stage now. However, large companies (primarily) have leased much of the commercially developable coal on Federal, State and private lands. Since removing large volumes by truck from the

Kaiparowits-Alton fields is impractical, the coal will have to be transported by rail or pipeline. When that development occurs, it is unlikely the coal will be utilized in the immediate area because of the extremely sensitive scenic and air quality values.

In the event USDI conducts a regional competitive lease coal sale in the area, it is possible industry may express interest in bidding on coal resources which were not included in the Forest's Coal Unsuitability Study. If this occurs, the USDI criteria will be applied to the unstudied area before the coal can be leased.

The potential exists for discovery of geothermal resources on the west side of the Forest. Thirty-six applications for lease were received on the Cedar City District, and eight on the Pine Valley District. All were withdrawn just prior to completion of Forest Service environmental assessments. A competitive-bid lease area (Known Geothermal Resource Area) exists at Navajo Lake, because applicants inadvertently overlapped to create a competitive bid situation. Geothermal interest on the Forest has dropped because of the current economic condition. Exploration and development continue in the Escalante Desert north of the Pine Valley District, where the potential for discovery is greater and where there are existing surface expressions of a geothermal resource. A moderate temperature geothermal - heated greenhouse industry has developed at Newcastle adjacent to the Pine Valley Ranger District. The Forest is the recharge area for desert warm water aquifers.

Common Variety Mineral Materials. Common variety mineral materials are made available throughout the Forest by commercial sales and free use. Many common varieties are used for Forest Service projects. The west side of the Forest has several good deposits of cinders which have been utilized extensively. Sand and gravel has been developed in numerous areas on all Ranger Districts.

Some of the pits are under special use permit and the use is exclusive to the permittee. Other pits are of a community-type. Depending on the case, charge-type or free-type permits are issued upon request. An operating plan is issued with each permit. The Pine Valley and Cedar City Districts have prepared comprehensive management plans for each community-pit. In 1984 the Powell District completed a comprehensive management plan for common varieties covering the entire District. Surface protection and reclamation practices are on-going at all areas.

A seven-year history (1977-1983) of common variety mineral materials disposal on the Forest can be found in the AMS of this Plan. This history shows the average amount of common varieties (sand, gravel, cinders, and rock) disposed to be:

Sold	4,698 tons/year
Given Away Free	60,241 tons/year
Used by the Forest Service	87,233 tons/year
TOTAL =	152,165 tons/year

(The estimated value at the present on-site rate charged by the Forest Service, 152,165 x $0.30/ton = $45,650/year.)

c. Expected Future Condition

Future technology, change in economic conditions, new discoveries, and changing needs will determine to a large extent where, when, and which minerals are developed. When this occurs special stipulations and operating procedures are included in federal leases, licenses, permits, and operating plans to coordinate with other resources as required. These protective stipulations and procedures may exclude surface occupancy, require special provisions, and/or may result in increased operating costs.

The policy and procedures set forth in the Interagency Agreement (IA) effective June 19, 1984, between the BLM and the Forest Service covering mineral leasing, will be followed whenever a proposal is received by the Dixie National Forest. This IA will be followed in respect to the processing of authorizations, such as licenses, permits, and leases, that grant rights to federally owned minerals in the National Forest System and in adjoining lands with Federal minerals (split estate lands). A copy of the IA may be found in the Appendix section to this Plan.

8. Human and Community Development

The Forest is currently operating six major manpower programs which provide employment, skill training, experience, and education for a wide range of age groups interested in natural resource management. Manpower programs provide a valuable service to the Forest and at the same time fulfill a U.S. Department of Agriculture commitment to serve the unemployed, underemployed, minorities, and economically disadvantaged youth and elderly through related forestry activities. The following programs exist on the Forest:

- Youth Conservation Corp (YCC). Funding changes has necessitated a cut back in this program. Over the years it has played an active and important role.
- Senior Community Service Employment Program (Older American). The Older American Program, being very active on the Forest, employs part-time elderly persons whose incomes are within poverty level standards.
- Volunteers. Because individuals participate in this program without compensation numbers of volunteers actively participating at any one time varies substantially. Campground host duties are popular volunteer projects on the Forest.
- Comprehensive Employment and Training Act (CETA). This program has been reduced. It is doubtful the Forest will be able to host the enrollees of the various titles of the Act.
- College Work Study (Coop. Ed.). This cooperative program is one which the Forest has supported within the limits of its funding capacity.
- Student Volunteer Program - With Southern Utah State College nearby, the Forest has an excellent opportunity to use students, especially in the Business Management area.

All participants benefit from the manpower programs. The enrollee receives income and training or employment opportunities that are not otherwise available.

b. Demand Trends

The outlook for manpower and youth training programs on the Forest is not encouraging. Many of the programs are Federally funded, with monies coming from other Federal agencies.

E. SUPPORT ELEMENTS

1. Landownership and Land Uses

a. Ownership

The Dixie National Forest has a gross acreage of 1,967,187 with 1,883,734 acres of National Forest System administered lands and 83,453 acres in other ownership. The major portion of the Forest was reserved from public domain when the Forest was established. Factors affecting acreage are 31,754 acres of exchange, 68 acres of donation, 10,724 acres transferred from other agencies, and 1,191 acres of reserved lands (unsurveyed submerged areas).

b. Classification

Special classifications of land often restrict resource uses and may effect objectives for land acquisition or disposal. The following tables indicate these lands which are withdrawn, classified or designated for a special purpose:

Wilderness

Pine Valley	50,000 acres
Ashdown Gorge	7,000 acres
Box-Death Hollow	26,000 acres
	83,000 acres

Withdrawn From Mineral Entry

Administrative Sites	3,109 acres
Recreation Sites	5,351 acres
	8,460 acres

The Federal Land Policy and Management Act directed that all withdrawals be reviewed for continuation or revocation prior to 1992.

F.E.R.C. (F.P.C.) Withdrawals	500+ acres

These lands are not being used for the purpose for which they were withdrawn, no action has been taken on them. The Forest proposes to remove these from the records through revocation of the withdrawals.

Some of these special classifications apply to the same acreage, therefore acreage figures are duplicated in some instances. Effects of these classifications on land adjustment activities cannot be generalized as each allows and/or restricts specific activities.

The land adjustment activities on the Forest consist of purchase, exchange, and donation. A lack of funds for purchase limits opportunities to block Federal ownership in those areas suitable for National Forest management. The only funding for purchase on the Forest is the Land and Water Conservation Fund Act of 1964. While the Forest has had approved tracts, there has never been any funds for purchase made available. The exchange program has been the land adjustment vehicle for the Forest. While the exchange program has been in effect for years, an active program was initiated in 1975. The Asset Management Program limited the activities for a couple of years, but it is anticipated that an active program can be reestablished. The exchange program can be characterized as, trading on a value basis certain lands with limited benefits to the National Forest (selected lands) for private lands (offered lands) that would better meet the needs and objectives of the Forest. In recent times this program has resulted in a small net loss in National Forest acreage as lower valued Forest lands were used in exchange for higher valued private lands, however, such results are strictly a result of the lands used. The donations received originate from landowner initiative rather than a program, and they have typically been of small acreage and low value.

Since land adjustment activities are normally conducted only with willing parties there is an inherent degree of uncertainty when forecasting changes and accomplishments. Improvements in landownership pattern are expected in the future as the land adjustment activities are carried out. A pattern of mixed ownership will prevail on the Forest with the land adjustment activities following a variety of resource needs and objectives.

Interchange is a land adjustment activity that does not involve the private sector. Interchange involves the exchange of Federal lands between one or more Federal agencies. The objectives of such activities are similar to those outlined in the land adjustment discussion. The Forest, in the interest of improved management, has explored this option in the past and will continue to look at opportunities to improve management by interchange activities.

Rights-of-way activities on the Forest involve road and trail rights-of-way usually in the form of easements. While the Forest has access in many locations due either to dedicated public or acquired rights, such rights do not begin to meet the need. There are rights-of-way needed for Forest system roads not yet developed, and there are rights-of-way needed for existing roads and trails not covered by deeded rights. This last group of needed rights-of-way consist of prescriptive rights developed by the public through past prescriptive use for roads and/or trails. These prescriptive rights perfected by the public need to be carried forward to formal rights when they will serve the needs of the public and National Forest.

Again the right-of-way activities are normally conducted only with willing parties, therefore, there is an inherent degree of uncertainty when forcasting changes and accomplishments. The rights-of-way activities are expected to improve the public access to the Forest and assist in the utilization of the resources.

The amount of private land boundaries adjacent to and inside the Forest creates a high priority for landline location and boundary marking. This program has a significant amount of work backlogged from earlier times when a limited program was in effect. Each mile of line established usually produces some type and degree of trespass. With the more active landline program in recent times a sizeable backlog of cases has developed and grows with the landline program. These cases generated by the landline program generally call for action under one of the following classifications trespass, title claims, or the new Small Tracts Act of 1983.

The nonrecreation special use program continues to grow at a fairly constant rate. Every effort is made to respond to applications for new permits as quickly as possible. The program involves a considerable investment in time both in permit processing and field inspections pre and post permit. The requirement of annual fee determination and billing also represents a sizeable investment in time. A listing of permits as of fiscal 1984 and fees collected from them are listed below.

TABLE III-23

PERMITS ISSUED IN FISCAL YEAR 1984 AND FEES COLLECTED

Use	Annual Fee	Miles R/W Length	Acres Permitted Area	Number of Cases Charge	Free	Other Agency	Total
Agriculture	69.50	1.7	611.7	8	2	0	10
Community	0	0	14.0	0	6	0	6
Industrial	2,539.40	0	48.6	81	8	0	89
Public Information	25.00	0	.2	1	1	0	2
Research Study And Training	50.00	0	562.0	2	1	0	3
Transportation	419.60	80.5	492.2	6	25	1	32
Utilities and Communication	17,531.99	248.8	1,508.9	39	29	6	74
Water	2,513.00	133.3	3,149.0	85	30	2	117
TOTAL	$40,688.49	464.3	6,773.5	291	105	9	405

d. Hydropower

There is one existing hydropower complex on the Dixie NF, operated under License of the Federal Energy Regulatory Commission, near Boulder, Utah, by Garkane Power Association (an REA).

The Forest has other drainages which are suitable for small scale pipeline-fed hydroelectric power generating facilities. Such facilities are generally intended to supplement power generation during peak electricity useage periods, and in conjunction with irrigation and culinary water diversion and transport facilities.

Through early FY 1985, three such proposals were received, and six inquiries made. Garkane has declared it will expand its Boulder Hydropower plant in the future, when market conditions are right.

e. Research Natural Areas (RNA's)

The Forest has identified three areas for further consideration as Research Natural Areas:

Table Cliff - about 1235 acres in Sections 4, 5, 8 and 9, T. 36 S., R. 1 W. The area contains undisturbed vegetative and geologic conditions that are unique.

Timbered Cinder Cone - about 640 acres in Sections 29, T. 37 S., R. 8 W. The area contains undisturbed vegetative and geologic conditions that are unique.

Red Canyon - about 460 acres in Sections 10 and 15, T. 35 S., R. 4 W. The area contains unique species of plants.

2. Soils

The Dixie National Forest is located primarily in the Colorado Plateau Province where topography consists of broad plateaus bounded by receding escarpments and dissected by vast canyons. The extreme southwest portion of the Forest occurs in the Basin and Range Province noted for its internal drainage characteristics and steep mountain ranges rising abruptly out of the valleys.

The complex geology of the area accounts for an intricate variety of soil types. The interbedded sedimentary rocks, including limestone, sandstone, shale, conglomerate and gypsum have been modified by faulting, folding and uplifting. The Pine Valley mountain laccolith consists of quartz monzonite porphyry. Extrusive igneous rocks consisting of latities, dacites, ignimbrites, breccia and tuffs, andesite and basalt occur over much of the area. Glacial morain and outwash are associated with the highest elevations. Landslides and landflows have altered the topography, especially below the plateau rims. Some geologic formations are especially susceptible to land movements.

Vegetation varies from desert shrub types at the lower elevations to alpine meadows at the higher elevations. A very complex pattern of soils has developed, because of the combined effects of differences in geology, geomorphology, climate, vegetation and aspect.

A number of special soil limitations have been identified on the Forest that affect management practices and resource uses. These include areas of low soil productivity, high erosion hazard, and geologic contact zones subject to slumping. Methods of timber harvest, road location and design must be altered to accommodate these hazards.

a. Watershed Condition

Watershed conditions have improved dramatically across the Forest since the 1940's. Prior to this time overgrazing had seriously depleted ground cover and increased soil erosion. Large reductions in livestock numbers and implementation of modern range management techniques have allowed most of the upland areas to recover to good condition. There are, however, numerous areas on the Forest where structural measures are needed to combat accelerated erosion. These areas usually have advancing gully networks or unstable stream channels. A recent watershed improvement needs inventory catalogued 725 acres of high priority watershed restoration projects needing work. There are an additional 1515 acres of smaller projects that require watershed restoration. In addition, there are 110,000 acres of poor condition range which are has not yet been brought back to satisfactory condition.

b. Soil Erosion

Several areas of extremely high soil erosion rates exist on the Forest, such as the pink cliffs (Wasatch/Cedar Breaks/Claron Formations) on the plateau sideslopes and blue shales above the Paria River and Henrieville Creek. Erosion rates from these unvegetated escarpments are difficult or impossible to significantly reduce. Other areas exist with high soil erosion hazard, but which are vegetated and can be managed for multiple resource outputs (e.g., areas with soils derived from the Claron and Carmel formation). On these areas greater restrictions are called for in timber harvest, grazing intensity, road construction, vegetation manipulation and other activities which might decrease protective ground cover.

c. Soil Productivity

Soil productivity varies considerably across the Forest with differences in elevation, precipitation, temperature, geology, vegetative cover, aspect, soil depth, texture, rock fragment content, slope, and drainage.

Generally, the lower elevation areas with pinyon-juniper vegetative cover types on steep slopes have shallow droughty soils with low productivity potential.

Sagebrush valleys and gently sloping areas of pinyon-juniper have moderately high productivity potentials. Many of these areas have been chained and seeded to increase the forage production for livestock and wildlife.

Plateau lands with ponderosa pine and mixed conifer vegetative cover types have moderately deep and deep soils. These have a moderate to high productivity potential. Generally, soils derived from basalt or andesite parent materials are the most productive timber producing soils.

Shallow droughty soils on steep slopes with south aspects derived from limestone parent materials typically have very low productivity potential for producing commercial timber. Soil erosion rates are typically high and regeneration success is poor.

High elevation plateau lands with spruce fir vegetation typically have moderately deep soils with low to moderate productivity due primarily to short growing seasons and cold temperatures. Regeneration success has generally been poor.

The extreme elevation and climate of 11,000 foot Boulder Mountain has produced soils of low productivity potential for both timber and rangeland.

d. Geologic Hazards

Geologic hazard areas identified on the Forest include potentially active fault zones and slump zones. Varying degrees of resource management implications are associated with each of these hazards.

Seismic hazard zones on the Forest have been identified and mapped. These zones extend approximately 1.25 miles from faults active in Recent or Quaternary times. These zones represent areas where there is a potential of rupture or shaking damage from earthquakes associated with fault slippage. Potential seismic hazards will be considered when designing buildings, dams, transmission facilities and other structures in these zones.

Slump zones commonly occur in broad bands along plateau sideslopes on the eastern portion of the Forest. The Wasatch-Kaiparowits contact zone is an especially important area of soil mass movement. Slump zones present special problems for those management activities involving road construction or other earth moving activities. Road cuts and other excavations frequently will initiate large scale soil mass movements which are difficult or impossible to control. Careful attention must be given to proper road location and design in these areas to minimize the incidence of slumping and associated resource costs.

e. Soil Resource Inventory

Detailed soil information is needed to provide information to resource managers to mitigate soil and geologic hazards. At present, an uncorrelated Land Systems Inventory has been completed for the entire Forest, however, the mapping units are quite broad, therefore, the data is often inadequate for specific project planning.

Detailed soil information has been collected on approximately 800,000 acres of the Forest (Order 2 and 3 soils survey). Currently, approximately 50,000 acres are inventoried annually. Current direction is to continue the soil resource inventory at an Order 3 level on the productive forest and rangeland, and an Order 4 level on lower producing lands.

Approximately 46,200 acres of timber land were removed from the timber base in this planning period, due to the lack of adequate soil and geologic information. The Forest will determine whether or not irreversible resource damage would occur if logging were allowed on these acres. It is important to collect this inventory information prior to the next Forest Planning update, in order to accurately determine the resource potential of these areas.

3. Facilities

The Dixie National Forest has numerous facilities including roads, bridges, administrative sites, buildings, dams and water systems. They require considerable time and money for operation and maintenance. There has been large investment in these facilities to enable the development, protection, and use of forest resources.

The Forest's Transportation System, including roads, bridges, and major culverts, provides access for forest users. The system serves this function, but many miles of the Forest's road and trail systems are below the standard actually needed to support land management. All bridges and major culverts are usable, but six bridges do not meet Utah State Standards.

Most administrative sites and buildings on this Forest are old. An aggressive program of maintenance and reconstruction is required.

The Forest has 28 water systems, used by both the public and forest employees. Many of these water systems need major maintenance or reconstruction.

The Forest has responsibility for inspection of both special use and forest-owned dams, canals, and pipelines.

The trail system is described in the recreation section.

a. Transportation (Roads)

The Forest has over 2,100 miles of Forest Development Roads on inventory. This includes 527 miles of arterial roads, 615 miles of collector roads, and 984 miles of local or terminal roads. The Forest is in the process of an on-the-ground review of the roads system. There are many roads that exist and are utilized as a transportation network that are not yet inventoried.

The Forest does maintenance on approximately 570 miles of Forest road each year This is about one-fifth of the total road system. Many miles of the Forest's road and trail systems do not meet the standard actually needed for land management needs.

The arterial system does not meet the standards necessary to support existing uses. The arterial roads were generally constructed as single lane with turnouts. Maintenance over the years has widened the travelway to a lane and a half width in most instances.

The collector road system is being increased each year by approximately four miles and an additional two miles is being reconstructed. The majority of this work is associated with the timber program. The collector system is being designed to accommodate all weather continuous use, with a single lane and turnout standard. It is anticipated the collector system will be in place by the end of the present ten year timber harvest program. The local and terminal system is being increased yearly at the rate of approximately 20 miles. The majority of the increase is the result of the timber sale program. The normal timber sale activity creates a road network density of approximately three to four miles of road per 640 acres. These roads will be used for future activities and will remain part of the Forest Development System. Roads not needed are closed for resource protection and/or improvement. This also eliminates the need for unnecessary expenditures for road maintenance.

The Forest has 46 bridges and 9 major culverts. Forty of the bridges meet Utah State Standards. The remaining six have been signed for loading capacity and may need to be repaired or replaced.

b. Administrative Sites, Buildings, and Support Facilities

There are 66 buildings used as offices, residences, and warehouses. Most of these buildings are over forty years old. The buildings are all included under a maintenance schedule. The Forest intends to place needed new buildings on the Regional Priority Construction List. Smaller facilities are constructed as feasible with available funds.

The Forest's 28 water systems serve administrative sites, recreational sites, and special use areas. Many of these water systems do not comply with Utah State Standards. The water systems that do not comply with Utah State Standards are being rehabilitated as funds permit.

Thirty-nine dams on the Forest are operated under special use permit. The Forest Service inspects these dams and requires permittees to perform necessary maintenance. The Forest owns and maintains four dams.

c. Highway Corridors

The following are the federal and state highways that provide access to the Forest:

- Interstate 15 - St. George thru Cedar City.
- Utah State Highway 18 - St. George to Enterprise.
- U.S. Highway 89 - from Orderville thru Panguitch to Richfield.
- Utah State Highway 143 - from Parowan thru Cedar Breaks to Utah Highway 14.
- Utah State Highway 56 - from Cedar City west to New Castle.
- Utah State Highway 14 - from Cedar City east to U.S. Highway 89.
- Utah State Highway 20 - from I-15 east to Utah State Highway 89.
- Utah State Highway 12 - from U.S. Highway 89 to Escalante.
- Forest Highway 41 - from Escalante to Teasdale.
- Forest Highway 17 - from Widtsoe east to Utah State Highway 12
- Cedar Breaks-Panguitch Lake Road - FS No. 30040 - this road goes from Cedar Breaks to Panguitch.
- Utah State Highway from U.S. 89 to Interstate 70.

d. Energy Transportation and Utility Corridors/Windows

The Dixie National Forest has analyzed existing and proposed energy transportation and utility needs as one of the key elements in the Forest Planning process.

This analysis is appended to this document as Appendix D.

Following is a summary of the most significant points from this analysis:

Existing Linear Rights-of-Way Evaluated as Potential Utility Corridors

Rights-of-way on National Forest land meeting standards for potential corridor designation have been identified (a corridor is defined as a linear strip of land having advantages over other areas for the present or future location of energy transportation and utility rights-of-way).

These rights-of-way are:

- Utah Power and Light Company's 138 kV transmission line from Cedar City west substation to St. George, Utah, via Newcastle and Central, Utah (Pine Valley Ranger District) a/.
- Garkane Power Association Inc's. 69 kV transmission line from Boulder Hydroelectric Plant to Escalante substation (Escalante Ranger District);
- Garkane Power Association's 69 kV transmission line from Henrieville substation to Escalante substation. a/
- Intermountain Power Project's 500 kV dc transmission line, from Newcastle to Veyo, Utah (Pine Valley Ranger District). a/
- Utah Power and Light Company's 230 kV transmission line in South Johns Valley and Cedar Fork (Escalante Ranger District). a/
- Utah State Road 18 from Enterprise to Central Utah (Pine Valley Ranger District).a/ b/;
- U.S. 89, Long Valley Junction Area (Cedar City Ranger District).b/ Three separate segments on National Forest land.
- Utah State Road 12, from the junction of Utah State Road 63 to Escalante, Utah (Escalante Ranger District). a/ b/

a/ These transmission lines and road rights-of-way are part of and within the Newcastle-Veyo and/or Johns Valley/Upper Valley Main Canyon planning Window areas. (See following discussion on these window areas.)

b/ State road routes are considered as portions of potential corridors or window for energy transportation facilities. These routes are not evaluated for the purpose of potential expansion or upgrading of Forest Highway systems.

Refer to Appendix D for the type of facilities permitted and the width of these potential corridors.

Window Areas

Seven areas on National Forest land have been evaluated as potential windows (these planning "window areas" are critical segments of terrain through which energy transportation and utility rights-of-way could pass in traversing the Forest.
These planning window areas are:

- Newcastle, Utah to Veyo, Utah (Pine Valley Ranger District).
- Interstate 15 (Pine Valley Ranger District).
- Three Creeks (Cedar City Ranger District: two separate segments).
- Hillsdale Canyon-Ahlstrom Hollow (Powell Ranger District).
- Johns Valley to Main Canyon via Upper Valley (Powell and Escalante Ranger Districts).
- Main Canyon to Widtsoe, Utah (Escalante Ranger District).
- Escalante, Utah to Antimony, Utah via Davis Flat Junction (Escalante Ranger District).

Refer to Appendix D for the type of facilities permitted and the width of these planning windows.

Exclusion Areas

Three areas on the National Forest have been identified as Exclusion areas. (These areas have statutory prohibition to rights-of-way for linear facilities on corridor/window designations.

These exclusion areas are:

- Pine Valley Mountain Wilderness (Pine Valley Ranger District);
- Ashdown Gorge Wilderness (Cedar City Ranger District);
- Box-Death Hollow Wilderness (Escalante Ranger District).

Avoidance Areas

Areas have been identified on the National Forest where environmental, statutory and/or technological effects from energy transportation and utilities would be difficult or impossible to mitigate. These areas include all Dixie National Forest lands not identified in the discussion above.

4. Protection

a. Fire and Fuels Management

From 1971 through 1979, the Forest averaged 81 fires per year, approximately 20% of which were man caused. The total area burned during this period was 8,917 acres.

In the June 5, 1984, Federal Register the Forest Service invited public comments on a proposed policy change to permit prescribed fires ignited by trained professionals to be used in wilderness areas. The purpose is to reduce the risk from wildfire and its consequences and to permit lightning-caused fires to more nearly play their natural ecological roles within wilderness. The Forest is currently developing Wilderness Plans detailing fine suppression strategies in the Forest's wilderness areas.

The Forest is developing Fire Management Plans to allow limited suppression for preplanned areas, under certain conditions. The intent is to permit less than full control if suppression costs and resource damage could be minimized by other suppression strategies.

Fuel management policy and direction requires a fuel treatment plan aimed at reducing fuels to near natural levels, or less than existed prior to an activity for each project that generates fuels or is undertaken to reduce existing fuel loading. Much of the fuels treatment on the Forest is expected to be accomplished with fuelwood programs and prescribed fire.

The Forest has completed a Level II Fire Analysis to document its most cost efficient fire management program. It considered the kind, number, location, timing, cost, and efficiency of fire management forces and activities at alternative budget levels under current management direction. The Analysis includes forces and resources available through Inter-Agency Cooperative Agreements, as well as resources available within the Forest Service through other Forests and Regions.

The hazard of wildfire on the Forest is increased significantly by the presence of summer homes, residence areas, and real estate developments on private land adjacent to the Forest, refuse dumps located near the Forest, seismic surveys involving the use of explosives, the public use of the Forest for recreation, and activities associated with logging and thinning. At special risk from these hazards are large areas of thinning existing on the Forest, recreation and aesthetic values, including values associated with National Parks and Monuments adjacent to the Forest, Forest capital investments, and the large number of summer homes and residences scattered on private holdings throughout the Forest.

b. Forest and Rangeland Pest Management

The principle insects and diseases affecting the Dixie National Forest timber stands are mountain pine beetle, pine limbrust, Douglas-fir beetle, Engelmann spruce beetle, western spruce budworm, dwarf mistletoe, and root rots. Labops, grasshoppers, and Mormon crickets are the principal insects affecting forage on the Forest. Pocket gophers and the porcupine are animals of significance affecting the timber resource.

Mountain pine beetle has caused extensive mortality in overmature, overstocked stands of ponderosa pine for several decades. Epidemic levels of the beetle, recorded since the 1950's have continued to cycle throught the Forest, removing many of the larger diameter trees and up to 70 percent of the volume in infested stands. The most recent infestations began in the early 1970's, but accelerated in 1976 through the present. Infestation are continuing in the Cowpuncher and Grimes Creek areas of the Escalante Ranger District and are intensifying on other areas of the Escalante and Teasdale Districts. Mountain pine beetle will continue to have a significant impact in the future on overstocked and unmanaged stands of ponderosa pine.

A serious epidemic of Engelmann spruce beetle occurred on Boulder Top and part of the Aquarius Plateau in the 1920's. Another outbreak of Engelmann spruce beetle in 1948 caused severe mortality through 1963 despite control efforts. The most recent outbreak started in 1968 and was controlled in 1969 after logging 3 MMBF of infested timber. Spruce beetle populations have been at endemic levels since 1970.

Douglas-fir beetle has historically caused mortality in mature and overmature stands of Douglas-fir. The most significant outbreak occurred from 1954 to 1963, though small localized infestations have occurred since 1963. At present, beetle populations are at endemic levels.

Thousands of acres of spruce-fir have extensive mortality caused by a bark beetle/root rot complex. Significant mortality began in 1976 and has since accelerated. The casual agents appear to be a combination of root rots predisposing trees to the western balsam bark beetle. This mortality is expected to continue with progressive expansion of present root rot mortality centers. A root rot complex of 1300 acres in the Peterson Grove on the Aquarius Plateau is presently being studied.

Western spruce budworm has caused several thousand acres of moderate to severe defoliation in the Red Creek area on the Cedar City Ranger District. Defoliation of Douglas-fir, white fir, and subalpine fir is expected to intensify over the next 4 to 5 years. About 15,000 acres were affected in 1983, expanding to 45,000 acres in 1984.

Dwarf mistletoe causes significant losses to infected stands, retarding growth and causing significant volume loss and eventual tree mortality. A survey of the Dixie NF in 1978 indicated that most of the Douglas-fir and about 40 percent of the ponderosa pine were infected.

Root rots caused by Fomes annosus, Armillaria mellea and Inonotus tomentosus cause mortality and growth loss in localized centers, and pose a threat to regeneration on infested sites. Damage from root rots can be expected to increase steadily unless control measures are undertaken.

According to the 1980 Timber Inventory, insect related mortality accounts for a 6.8 MMBF timber loss per year and disease related mortality accounts for 12.6 MMBF per year.

Pocket gophers have caused mortality to regeneration, especially where located near meadows or other natural openings. Damage caused by porcupines is severe in some stands. The porcupine's feeding activities can cause mortality by girdling the tree and affects tree quality. Damage most frequently occurs in pine and aspen stands. Small trees are most susceptible to porcupine caused mortality.

Black grass bugs (Labops hesperius) are found throughout the crested wheatgrass seedings on the Forest. These insects lower forage productions significantly if the grass stand is a monoculture. Control of this insect using pesticides has not proven to have any long term effects.

Infestations of grasshoppers and Mormon crickets periodically appear on various ranges of the Forest. Should sizeable areas be seriously affected by these insects, pesticide control measures are available.

Management direction for the Forest includes an Integrated Pest Management (IPM) program in which all aspects of a pest-host system are studied and weighed to provide the resource manager with information for decision making.

Current pest management practices include stand hazard rating to identify high-risk stands, monitoring insect and disease levels, and control measures such as harvest and thinning to reduce the potential for outbreaks. High value trees in developed and administrative sites may also need treatment with protective sprays.

A principle current method for minimizing the impacts of Forest pests is the conversion of unmanaged timber stands to managed stands in the shortest time feasible. This would involve harvesting many of the old growth timber stands which are sustaining the greatest loss to insects and disease.

Economics and timber demand will play a large part in the Forest's ability to manage these high risk stands. A good proportion of the remaining old growth is located on slopes over 40 percent, and require the use of cable or aerial systems for harvest. Stumpage value and locally developed technology are important factors in the feasibility of harvesting high risk stands on these areas.

c. Air Quality

The National Clean Air Act requires that airsheds be designated under one of three classes:

Class I - Only minor air quality deterioration.
Class II - Permitted moderate deterioration.
Class III - Permitted deterioration up to National Ambient Air Quality Standards.

The entire Dixie National Forest is designated Class II. There are no non-attainment areas because of the lack of pollution sources. Class I area sheds at Zion, Bryce, and Capital Reef National Parks provide an umbrella of air quality protection over most portions of the Dixie National Forest.

Forest activities contribute very little to deterioration of air quality except for uncontrolled wildfire. This source is recognized by the State as unavoidable and occurs only occasionally.

The Forest burns by prescription about 200 acres per year and may expand the program in the future. By using the clearing index*, especially on burns below 6,500 feet, prescribed burning will not contribute additional pollutants to the non-attainment areas. Other sources of pollutants in the Forest are dust from unpaved roads and exhaust from motor vehicles.

No change in air quality conditions over the Forest is anticipated.

No serious problems of off-Forest pollution sources affecting the Forest are anticipated because of the close proximity of Class I National Park areas.

d. Law Enforcement

The Forest Service has certain statutory responsibility for law enforcement on National Forest Lands. The Dixie N.F., in cooperation with State, Local, and other Federal law enforcement agencies, maintains a law enforcement program that strives to ensure compliance with laws and regulations, protection of the public and their property, protection of Forest Service employees, and protection of Forest Service property and resources.

The following activities are existing and potential Law enforcement problems on the Dixie National Forest:

- Vandalism
- Fee deposit break-ins
- Theft of timber and Christmas trees
- Drug trafficking and growing of cannabis
- Misuse of motorized vehicles
- Threats, intimidation, assaults, and battery against Forest officers.
- Man-caused wildfires

The Forest's approach to meeting its responsibilities is to:

- Cooperate to the fullest extent possible with State and local agencies through the use of cooperative law enforcement agreements.
- Support a Shared Services Special Agent located in Salt Lake City.
- Train selected Forest Officers to investigate and initiate the limited law enforcement actions.
- Maintain at least one Level IV Law Enforcement Position on the Forest.

The Forest has five cooperative Law Enforcement agreements with State and local Law Enforcement agencies, at an annual cost of approximately $13,000. National statistics and local trends indicate an increase in the Public's use of National Forest land, and a resultant increase in law enforcement activities. Therefore, there is an increasing need for law enforcement program emphasis to meet the Forest's statutory responsibility.

CHAPTER IV
ENVIRONMENTAL CONSEQUENCES

A. INTRODUCTION

This chapter describes the environmental consequences of implementing the Proposed Action or any of the alternatives described in detail in Chapter II. It forms the scientific and analytic basis for the comparison of the alternatives and the environmental consequences discussed in Chapter II.

Environmental Consequences (effects) can be either beneficial or adverse; direct or indirect. Effects vary in importance from negligible to those which are significant, and vary in duration from immediate and short-term (ten years or less) to long-term (over ten years). Environmental consequences are displayed in this chapter for resource and support elements by effects for the following decades:

Decade 1: 1986 - 1995
Decade 2: 1996 - 2005
Decade 3: 2006 - 2015
Decade 4: 2015 - 2025
Decade 5: 2025 - 2035

Each alternative considered in detail is comprised of different combinations of management prescriptions. The amount of land assigned to each prescription area for each alternative is displayed in Chapter II, Table II-132 and on the alternative maps (separate). The environmental consequences of each alternative are based upon the results of implementing the different combinations of management prescriptions. Many adverse effects could be eliminated from all alternatives by applying general Forest Direction Management Requirements displayed in Chapter IV of the Forest Plan. The Management Requirements ensure that long term land productivity is not impaired by any alternative. The prescriptions for the management areas, including mitigation measures, are displayed in detail in Chapter IV of the Plan. Mitigations are also discussed under the appropriate resources in this chapter.

The environmental consequences are described in a narrative and displayed in tables. The alternatives, including the proposed action, are compared with the Current Program Alternative. The tables show the actual Current Program Alternative and show how the other alternatives differ from that Alternative.

In all tables, the alternatives are numbered in the same order as they are described in detail in Chapter II.

Alternative A - Current Program (No action)
Alternative B - Composite Action (The preferred alternative)
Alternative C - Constrained Budget
Alternative D - Current Budget
Alternative E - Non-market Emphasis
Alternative F - Market Emphasis
Alternative G - 1980 RPA
Alternative H - RPA High Productivity

Adjustments to the predicted consequences in future amendments to the plan and revisions will be based on information obtained from the monitoring program. The monitoring requirements are explained in Chapter V of the Forest Plan.

Activities having no significant effects on the environment are not discussed in detail. These activities are: monitoring, inventories, planning and research.

This chapter is organized as follows: Section B describes the direct and indirect environmental effects by resource elements such as range, recreation, or timber. Effects are discussed in subsections titled "Probable Effects of Implementing Alternatives, " "Unavoidable Adverse Effects," "Short-term vs. Long-term Effects," and "Irreversible and Irretrievable Commitments of Resources." Section C discusses the economic effects and Section D discusses the social effects of each alternative. Possible conflicts between projected effects of the Proposed Action Alternative and the land-use plans and policies of other Federal, regional, State of Utah, and local governments are discussed in Section E. Section F discusses the energy requirements and conservation potential of the alternatives. Sections G, H, and I deal in summary form with "Irreversible and Irretrievable Commitment of Resources", "Adverse Environmental Effects That Cannot Be Avoided", and "Short-term Uses of Man's Environment and the Maintenance of Long-term Productivity". Section J reviews the "Natural or Depletable Resource Requirements," and Section K treats "Urban Quality, Historic, and Cultural Resources."

Priced outputs that contribute to net public benefits (NPB) are those outputs which can be valued in the economic efficiency analysis. These values can be administratively determined or determined in the market-place. Examples are timber, recreation, and livestock grazing. The resource outputs and their alternative contributions to the NPB are detailed in Chapter II of the DEIS.

Non-priced components or outputs that contribute to NPB are those outputs which cannot be assigned a value in the economic efficiency analysis, an example is visual quality. While these components do not contribute to NPB since they are not valued, they represent desirable attributes for which some amount of NPB is foregone in each alternative. Detailed information is in Chapter II.

Each alternative represents a certain combination of quantitative and qualitative benefits. Often a qualitative benefit is decreased as a quantitative benefit is increased. An example would be loss of visual quality as the level of timber harvest is increased, while in other alternatives the level of timber harvest is lowered to meet visual quality objectives. The environmental consequences of qualitative and quantitative emphasis are displayed in the benchmark and alternative writeups in Chapter II.

B. PROBABLE EFFECTS OF IMPLEMENTING ALTERNATIVES

1. Recreation

a. Developed Recreation Public

The current program would maintain the existing site capacity, as the demand increases the facilities would begin to deteriorate due to overuse and vandalism. Maintenance would be done by volunteers and members of human resource programs. The Forest would become dependent on these programs, if they are eliminated, the agency would not be able to keep many of the existing sites open and available with the present funding. The hardening of five sites per year would only be 20 percent of the total lost to wear and tear. Demand will likely exceed the facilities available by 2010. Many visitors would become dissatisfied with the developed sites due to lowering of the experience quality and overcrowding, and move to dispersed areas. This will likely result in resource damage in the more popular dispersed areas.

Under the Composite Action Alternative, fee sites and heavily used developed sites would be managed at full service level and other developed sites at a reduced service level. This Alternative schedules reconstruction of existing facilities to keep up with 50 percent of the anticipated needs. New site construction would be located in areas where it would enhance dispersed recreation opportunities. Projected use would exceed the supply in 2015, heavy maintenance would be needed at this time to protect the original investment. Some of this maintenance would be done by Human Resource Programs and Volunteers. The remaining maintenance, approximately 10-20 percent, would be done by the Forest Service. Crystal Mountain Ski Area will be allowed to develop, resulting in the change of the physical environment on the west slope of Navajo Ridge. Dispersed recreation would continue to increase at 3-5 percent annually; however, the capacity for the Forest would not be exceeded by the end of the planning period. Trails and trailheads would be constructed and maintained to control and disperse the use, these would create some disturbance during their construction. However, the overall effect of the developments would be to protect the environment.

The Constrained Budget Alternative does not construct new facilities or reconstruct any of the existing facilities. Therefore, there is no damage to resource from these types of activities; however, damage would result from overuse and lack of maintenance. Most of the original investment in the campgrounds would be lost to use. Facilities would be worn out and the vegetation would be trampled until by the end of the period there would be little or nothing left of original investment or the site. Demand will likely exceed the facilities available by 2005. Eighty to ninety percent of the maintenance during this period would be by members of Human Resource Programs or volunteers. Dispersed recreation would occur throughout the Forest without control. The result would be roads and trails in areas where they are not wanted and where there would be potential conflicts with other resources. The popular dispersed sites would be worn out, and litter would increase across the Forest.

The Current Budget Alternative does not construct any new facilities, there would be three units reconstructed each year. This is approximately 2 percent of the reconstruction needed to keep up with normal deterioration. Human Resource Programs and volunteers would be relied on to do 60-70 percent of the maintenance work. Ten percent of the sites would be closed each year to allow the natural vegetation to become reestablished; however, the closing of these sites would put more pressure on the sites remaining open. Overcrowding in the existing sites would diminish the quality experience, create resource damage, and cause law enforcement problems. After the year 2005 the capacity for developed sites would be reached and more people would camp in dispersed areas creating overuse in the popular sites. The overuse would cause loss of vegetation and soil. Trail and road maintenance would be done only on those areas that are more heavily used, concentrating the recreation use more and causing more damage to the popular areas.

The Non-Market Alternative proposes the construction of campgrounds where they would emphasize dispersed recreation use. Developed recreation use in the more popular sites would exceed the facilities available by the year 2020 and people would camp in the dispersed areas or off the Forest in private developments. The emphasis would be to encourage private developers to construct facilities to accommodate the increased demand. Up to half of the maintenance in developed sites would be done by members of Human Resource Programs or volunteers. The construction of the three new sites at Deer Lakes Trailhead, Cowpuncher, and Barker Lakes would be in new areas and would disrupt the natural forest ecosystem. The transfer of people from developed sites to dispersed areas in this alternative would have less of an impact than other alternatives due to construction of trails and trailheads that help disperse the people and prevents overuse in the more popular areas. The actual construction would have some immediate effect, but the long term effect would be lessened.

The Market Alternative proposes the construction of five new campgrounds and group areas, these in addition to the existing facilities would accommodate the projected demand to the year 2020. The new construction would impact the natural forest environment; however, use on the Forest would be more concentrated and in areas that would be designed to accommodate it. Maintenance would be done wholly by the Forest Service. There would be no dependancy on other agencies or programs. There would be no new construction for trails or trailheads; therefore, the impact on dispersed areas from construction would not be as great. However, there would be no maintenance on trails or cleanup of the general forest environment and the recreation use would likely have some effect on aesthetics.

The RPA 80 Alternative proposes to reconstruct and harden 344 units and construct 27 new units by the year 2000. The site hardening is approximately 15 percent of the total needed to keep up with depreciation. This would disrupt regular recreation activities during the actual construction phase; however, the hardening would help to keep people in designated areas, thus,preserving the vegetation around the existing sites. The new sites would help to spread the use over more area and prolong the life expectancy of existing sites. After 2000 this alternative proposes to construct 200 units which would mean the disruption of the natural environment in four areas, however; it would help preserve the existing sites. The projected use for developed sites would be accommodated until the year 2010, after this time much of the overuse would likely occur off the Forest or in dispersed areas on the Forest. The quality of the recreation experience in the developed sites would be diminished and law enforcement problems would develop. Ten percent of the existing trails on the Forest would be maintained to help accommodate the dispersed recreation. No new trails would be constructed. New road construction across the Forest would introduce motorized vehicles into new areas creating conflicts with off-road vehicles and other resources.

The High Productivity Alternative proposes to harden 3 sites per year. This is approximately 2 percent of the facilities that would be depreciated each year due to use. The continued use of the facilities after they have been used to their fullest would result in vandalism and the loss of the original capital investment. The demand for developed sites would exceed the facilities available by the year 2005. The many new roads that would be constructed to remove the timber and other commodities would create conflicts between recreation vehicles and wildlife. Funding would not be available to mitigate this conflict or to control sporatic use of off-road vehicles. The existing trail system would not be maintained and new construction would replace many of the trails with roads. This would change the recreation use pattern on the Forest. The non-motorized recreation experience would be reduced or destroyed on the Forest.

Portions of some developed sites are located in 100-year flood plains. These sites, though not a hazard to human life, may receive some damage to facilities during flooding. Additional expenditures are necessary to protect facilities and notify the public of possible flooding. Table IV-1 displays the projected recreation demand and the capacity of facilities programmed by alternative.

TABLE IV-1
RECREATION PROJECTED USE IN PUBLIC SECTOR COMPARED WITH FACILITIES CAPACITY FOR EACH ALTERNATIVE IN MRVD's

		Alternative							
Time Period	Projected Use	Facility Capacity by Alternatives							
		A	B	C	D	E	F	G	H
1981-1985	339	787	1180	787	787	787	1180	787	787
1986-1990	382	787	1180	787	787	1180	1180	787	787
1991-2000	554	787	1196	787	787	1196	1180	807	787
2001-2010	870	787	1205	787	787	1285	1518	807	787
2011-2020	1417	787	1305	787	745	1305	1639	877	787
2021-2030	2858	787	1343	787	708	1305	1743	960	787

b. Developed Recreation-Private

Use of recreational residence, lodges, resorts, supermarkets, marinas, organizational sites and ski areas, operated by the private sector is expected to increase under all alternatives.

*Projected use is based on projected population growth with a 3 percent increase per year through 1990 and 5 percent per year from 1991 to the end of the planning period. Projected use for ski areas is based on the growth of Brian Head over the past 5 years. This projection is questionable due to the unknown of when the demand for skiing would level off or peak out. None of the alternatives provide for the projected use as it is not known if the potential exist to accommodate the maximum use. Private industry would need to do a market analysis to determine what the true potential use is and then approach the Forest with a proposal based on their analysis. The Current Program, Constrained Budget, Current Budget, and High Productivity Alternatives, which do not provide the needed facilities in the public sector, would increase the demand on the private sector. The Composite Action Alternative would maintain existing recreational special uses except for the Brain Head and Crystal Mountain ski areas. Crystal Mountain would be permitted to developed and Brain Head would expand to join with it. The Composite Alternative would provide for expansion of the existing ski area to its potential capacity. Crystal Mountainwould be allowed to develop and expand after master plan approval. All master plans would incorporate mitigation measures to reduce impacts.

The Forest would favor expansions by the private sector on existing sites over new site development. New development would not be actively encouraged, however, the Forest would respond to proponent interest on an individual bases.

Construction of facilities allowed under recreation special use permits causes vegetative loss, soil disturbance, and displaces some types of wildlife. Human use of the facilities and their surrounding areas causes minor vegetation loss and disruption of wildlife. Increased capacity for the ski areas would place additional demands on utilities, water systems, roads, and other structures.

The capacity for developed recreation in the private sector, displayed in the chart below, is shown by alternatives. Also, shown is the projected use based on existing growth patterns for Brian Head Ski Area during the period from 1976 to 1984 and an expected growth pattern of 3 to 5 percent per year.

The Current Program, Constrained Budget, Current Budget, Non-Market, Market, RPA 80 and High Productivity Alternatives all have a constant capacity shown in the Table. This capacity may change under any of the alternatives if a valid proposal is submitted and approved through the proper channels. The Composite Alternative shows an increase in capacity with the development of Crystal Mountain Ski Area. None of the proposals meet the projected use due to the projected demand for ski areas. Most of this demand comes from outside the state and it is difficult to predict at what point it will level off.

TABLE IV-2
RECREATION PROJECTED USE BY THE PRIVATE SECTOR
COMPARED WITH FACILITIES CAPACITY FOR EACH ALTERNATIVE
IN MRVD'S

Time	Projected	Alternative							
Period	Use	A	B	C	D	E	F	G	H
1981-1985	259	859	859	859	859	859	859	859	859
1986-1990	426	859	859	859	859	859	859	859	859
1991-2000	1294	859	1155	859	859	859	859	859	859
2001-2010	1812	859	1155	859	859	859	859	859	859
2011-2020	2952	859	1155	859	859	859	859	859	859
2021-2030	4809	859	1155	859	859	859	859	859	859

c. Dispersed Recreation

The Forest has the capacity to accommodate dispersed recreation demand in all of the alternatives discussed. In all alternatives except the Non-Market the anticipated use would result in damage to the resource in the more popular sites because of overuse. The Non-Market Alternative schedules money for construction of trails, trailhead and dispersed camping areas to regulate use and control resource damage. Information systems would be improved, present trails would be brought up to standard and new trails built. Trailhead facilities for both summer and winter use would be added at appropriate locations. The Composite Alternative would provide trail maintenance to accommodate anticipated use. Trailheads would be constructed to accommodate use of wilderness and heavily used dispersed winter sports areas.

The Forest expects resource deterioration, such as soil and vegetation loss, to increase. Increased use of dispersed recreational area for overflow camping and greater crowding would increase user dissatisfaction. Greatest impacts would be felt in areas adjacent to water. Damage to resources from uncontrolled parking in the absence of developed trailheads is expected in all alternatives except the Non-Market Emphasis Alternatives, especially during the latter part of the planning period. The Forest also expects resource damage to increase from motorized vehicle travel off roads and trails. Table IV shows the expected output for each alternative in thousands of Recreation Visitor Days (MRVDS). A comparison of alternatives shown in this chart shows that the amenities in the Non-Market and Composite Alternatives would increase the use over the Current Program. The Constrained Budget Alternative would not maintain trails and roads and access becomes difficult, dispersed recreation would decrease. The Market Alternative would provide more access, however, physical attractions, such as, solitude and aesthetic qualities would decrease as would the use.

TABLE IV-3
PROJECTED RECREATION VISITOR DAYS
(In Thousands for Dispersed Recreation, by Alternatives)
FOR SELECTED YEARS, 1986-2030
FY 1986 - 810680 RVD'S

Alternative	1986	1990	2000	2010	2020	2030
A	811	815	1085	1727	2685	3643
B	811	820	1275	1718	2746	3774
C	811	758	1153	1368	2030	2693
D	811	814	1077	1722	2680	3637
E	811	820	1275	1718	2746	3773
F	811	830	950	1643	2225	2806
G	811	644	699	747	998	1348
H	811	815	1085	1727	2685	3643

Table IV-4 indicates the amount of land that will be available for motorized use under each alternative. The Constrained Budget Alternative shows the most land available due to insufficient funds to administer closures. The Non-Market Alternative has the largest amount of land closed to motorized vehicles to protect wildlife habitat and other amenities.

TABLE IV-4
AREAS AVAILABLE FOR USE BY MOTORIZED VEHICLES BY ALTERNATIVE AND BY CATEGORIES OF USE

	Estimate of M Acres by Alternatives							
Use Category	A	B	C	D	E	F	G	H
Vehicle Use Over Most of Area	1,516.3	1,478.1	1,800.7	1,516.3	976.3	1,621.9	1,516.3	1,516.3
Vehicle Use Prohibited or Restricted over Most of Area	284.4	322.6	0	384.4	824.4	178.8	284.4	284.4
Closed (Wilderness)	83.0	83.0	83.0	83.0	83.0	83.0	83.0	83.0
Forest Total Acres	1,883.7	1,883.7	1,883.7	1,883.7	1,883.7	1,883.7	1,883.7	1,883.7

d. Trails

The miles of trails on the Forest would increase in Composite, Non-Market, and RPA 80 Alternatives. The new trail construction would cause some damage to the visual resource and possibly some disturbance to wildlife. The increased miles of trail would enhance the dispersed recreation opportunity and increase the density of people. The remaining alternatives would not add new trails except possibly in the wilderness areas. Maintenance would only be done on the more popular trails, and there would likely be a loss in the original capitol investment. The Constrained Budget Alternative does not provide for maintenance of trails; the result would be damage to the resource in the more popular areas, and the trails system would gradually disappear in areas that receive sporatic or infrequent use.

e. Visual Resource

Impacts on the visual resource is measured by changes from the landscape natural appearance. Management standards and guidelines protect the natural appearance in varying degrees by setting visual quality objectives (VQO's)* in keeping with other objectives of each alternative.

Visual quality on the Forest in some areas receives high priority. These areas are along major travel corridors between National Parks and Monuments and travel corridors leading to high use recreation areas and private property within the Forest developed into cabin sites. The Current Program, Composite, Non-Market and Market Alternatives place the most emphasis on maintenance of the visual resources. The Constrained Budget and Current Budget Alternatives has funding constraints which limit the rehabilitation of the visual resource. The RPA 80 and High Productivity Alternatives emphasize market items that would return dollars to the treasury, and amenity items, such as visual resources, would be treated as a incidental benefit.

f. Cultural Resources

Cultural resources, as the irreplaceable and non-renewable fabric of our Nation's history and prehistory , are identified, protected, preserved and interpreted according to a body of legislated mandates enacted since 1906. With the conception of a project, a field survey is conducted to identify the existing cultural resources within the proposed area of disturbance. If part or all of the identified cultural properties are evaluated as significant and eligible for inclusion on the National Register, as outlined in 36 CFR 60.4, then the effects of the proposed activity upon the significant resources must be determined.

Determinations of both significance and effect are made in consultation with the Utah State Historic Preservation Officer. Prior to any Forest undertaking, which may affect a cultural resource property, the property is evaluated for significance. The categories of significance are:

- -Class I (significant)
- -Class II (unevaluated)
- -Class III (non-significant)

The categories of the effects of a Forest undertaking upon the cultural resource property are:

- -No Effect
- -No Adverse Effect
- -Adverse Effect
- -Beneficial Effect

Projects, which cause "no adverse effect" and "adverse effect" to significant or unevaluated properties, must be accompanied by a data recovery plan which would mitigate the effects of the undertaking upon the cultural resource. As with determinations of significance and effect, data recovery plans must be reviewed and concurred with by the Utah State Historic Preservation Officer.

Since 1975, over 95 percent of the projects conducted on the Dixie National Forest have been determined as causing "no effect" on the significant or unevaluated cultural resources. The large number of "no effect" determinations is consistent with the present direction of management that steers disruptive project actions away from significant or unevaluated cultural properties. For example, significant sites or unevaluated sites within proposed timber sale areas are simply flagged and avoided by harvesting equipment.

Most projects conducted on the Dixie National Forest possess sufficiently flexible boundaries as to allow for the avoidance of significant or unevaluated cultural resources. A notable exception to this statement is the land exchange which removes the protective umbrella of mandated legislation from the significant cultural resource property as it moves to private ownership. In the past, proposed land exchanges have been cancelled by management because of the costs associated with mitigating the effects of the action on the significant cultural resources.

The enacting of any one of the eight management alternatives would not significantly alter, change, accelerate or decrease the degree of direct project activity impacts to the cultural resources base. Under all alternatives, management direction would require the avoidance and/or mitigation of project effects upon significant or unevaluated cultural resources.

Indirect project activity impacts, in contrast, would significantly differ between alternatives. For example, alternatives that promote the construction of new roads into previously hard to access areas would indirectly contribute to increased vandalism. Improved access would also promote the presence of a greater number of vehicles in a given area. The presence of more vehicles can be damaging to certain types of cultural resource properties such as rock art panels that are susceptible to decay induced by carbon mongh intentional or Alternatives A, B, D, E and H, which emphasize dispersed recreation, are potentially very disruptive to the cultural resource base. Dispersed recreationists, like other Forest users, impact cultural resources through intentional or unintentional vandalism. Intentional vandalism might include the use of petroglyphs for target practice or the collection of prehistoric artifacts from the surface of a site. An unintentional form of vandalism could witness the establishment of a modern camp within the boundaries of a cultural resource property. The degree of these impacts would increase or decrease according to the level of dispersed recreation. It should be stated that adverse effects associated with dispersed recreation are difficult to prevent or to mitigate.

Operating on the assumption that measurable and direct project activity impacts would not significantly differ between alternatives because of policy and procedure, the preferred alternative would determine, in a monumental fashion, the:

-Amount of acres surveyed annually and concurrently.
-The degree to which we expand our knowledge of the cultural resource base.

Generally, the more ground-disturbing a particular form of management activity, the closer the scrutiny by cultural resource specialists. Land exchanges, nonstructural range improvements, timber sales and certain types of nonstructural wildlife habitat improvements are the most disturbing types of management activity. Protective fuel breaks and treatments, which employ prescribed burning, herbicide spraying and seeding, are uniformly the least disturbing activities.

Land adjustment activities (exchange and purchase) on the Dixie National Forest would increase dramatically under Alternatives E, F, G and H. Under the first three alternatives, lands in the Brian Head area would be offered to generate the acquisition of trailheads, parking areas, rights-of-way into dispersed activity zones and winter sports areas. According to the provisions of Alternative H, land acquisition for the timber and range programs would be given priority. Under all eight alternatives, "selected" lands would need to be 100 percent surveyed. Significant sites must be mitigated prior to the exchange of parcels of National Forest System land.

Alternatives F, G and H, which emphasize non-structural and structural range improvements, would strive to improve the quality and intensity of grazing on 20,000 to 45,000 acres. Range projects, which are usually positioned within the high site density areas of the pinyon-juniper forest, are intensively surveyed.

Alternatives A, B, D, E, F, G and H, which maintain the timber program at or above the current level, would insure the continued vitality of the cultural resources program both in terms of acres surveyed, resources recorded and support dollars provided. Although timber sales are only 10 percent to 30 percent sample surveyed because of increasing ground obscurity and decreasing site density, large numbers of acres would be subjected to survey simply because timber sale areas involve large tracts of land. Concurrently, our ability to expand our knowledge of the cultural resource base would also increase.

The ability to increase our knowledge of the cultural resources base does not rest totally on our ability to survey large project areas. Alternative or complementing methods can include the following:

-The completion of a cultural resources overview.

-An approach to archeological document composition that emphasizes the synthesis of data and the encouragement of out-service (i.e., university, foundation) research.

-The initiation of systematic surveys, independent of project generated survey, which would allow for the testing of specific hypotheses and the investigation of all Forest micro-environments.

-The use of volunteers to conduct non-project research, survey and excavation.

-The submission of annual National Register nominations to meet Target #3 (FSM 2361.03-2).

And, in order to insure the continued viability of the cultural resources program and, concurrently, the cultural resource base, future needs must be considered. The projected needs of the program are basic:

-The employment of a forest archeologist and/or shared services archeologist and seasonal technicians.

-The initiation and maintenance of a public awareness program, in conjunction with continued law enforcement efforts, to curb the destruction of archeological properties.

-The enhancement of the cultural resources through audio-visual programs, lectures, interpretive signs and stabilization of significant architectural sites through cooperative programs involving volunteers and adjacent agencies of Government.

g. Unavoidable Adverse Effects

Reconstruction and construction of developed recreation sites would remove vegetation for roads and other facilities. Developed recreation sites preempt forage utilization by permitted livestock. Sites that receive heavy human use on holidays and weekends would suffer from loss of vegetation, soil compaction, and streambank damage unless the site is modified to prevent damage. This overuse would be increased as the population increases. Some alternatives would construct new facilities to help alleviate the problem. Law enforcement to help control the problem would also be low under the low budget alternatives. Construction and reconstruction of support facilities for dispersed recreation such as trailheads, parking areas, and toilets would result in removal of vegetation.

Use of off-road vehicles damages vegetation and disturbs the soil. The noise from these vehicles may cause wildlife to move short distances. The Current Program, Composite and RPA 80 Opportunities Alternatives would allow the most adverse effects, and the Non-Market Alternative the least. These adverse effects would significantly affect a relatively small area and would require careful management to insure the protection of other resources. Occasionally site rehabilitation would be necessary to protect soil and water resources, and law enforcement would be necessary to insure compliance with regulations.

Implementation of the Composite, Non-Market, and Market Alternatives will cause some disruption of the physical environment with new construction and increased reconstruction. However, the Currant Program, Constrained Budget, Current Program and High Production Alternative will likely have the greatest impact to existing facilities. These alternatives will allow extensive damage, as the facilities, become worn out from over use with no reconstruction. People would likely become dissatisfied with the facilities being in a state of disrepair and move to the dispersed area where more damage would occur.

h. Short-term Uses vs. Long-term Productivity

Developed recreation sites are long-term commitments for a particular piece of land. Maintenance work repeated periodically increases the long-term productivity of that land and helps to mitigate some impacts. While recreation use of dispersed areas may cause loss of soil and vegetation. Construction of facilities can help mitigate these impacts. Alternatives which do not provide for sufficient facilities in developed sites would result in the over use of many of the popular dispersed areas.

Construction of dispersed recreation facilities (ie., trails, trail heads, etc.) is a long-term commitment for the occupied area. The effects of these facilities would continue as long as human use continues. This human use is short-term, but has cumulative effects on areas of concentrated use which may have long term effects.

Most recreation special uses are long-term commitments of land for a specified use. The adverse effects continue as long as the special use remains. The major adverse effects of construction are short-term and can be mitigated or prevented.

Off-road vehicle travel is a short-term use. However, its cumulative effects may remain for many years. Proper management of ORV use can eliminate all but minor adverse effects on long-term productivity. Alternatives such as the Current Budget and Low Budget do not provide a strong management program and are most likely to allow long-term adverse effects on the land. The Composite and Non-Market Alternatives call for stronger management programs to protect the land.

Changes in visual quality caused by resource management activities are usually long-term effects if they include permanent structures, roads, major soil movement, or major changes in vegetation. Temporary installations or minor activities cause only short-term changes in visual quality.

Dedication of a site to cultural resource purpose is a long-term commitment. Destruction of a cultural resource without prior investigation permanently destroys its historical value.

Designation of Research Natural Areas is a long-term commitment, but does not reduce productivity of the land.

i. Irreversible and Irretrievable Commitment of Resources

Grading the soil and recontouring the land for road construction creates the most permanent change in the landscape and impact on soil and vegetation. Damage to soil and vegetation by human use takes a long time to heal naturally and the healing process would be extended if precautions are not taken to prevent overuse to contain it in designated locations. The impacts caused by various recreational uses can be restored by removing structures, reestablishing the contour of the land, revegetating, and closing the area to human use. Impacts that cannot be mitigated include sedimentation of streams due to erosion, or the loss of wildlife or plant species. No loss is expected of any wildlife or fish species as a result of recreational use under any of the proposed alternatives. Sedimentation would be minimal and within acceptable standards under any of the alternatives.

There will be no irreversible or irretrievable commitment of resources caused by off-road vehicles.

Loss of a cultural resource site is irretrievable and irreversible. The Composite Alternative would provide the most protection against site loss. The 1980 RPA, and Non-Market would also protect cultural resources against irretrievable and irreversible losses by increasing the inventory program.

Designation of Research natural Areas is reversible. However, alteration of a natural areas by human activities often is not reversible for scientific purposes. Once natural ecosystems are unnaturally altered, their value as a scientific baseline is diminished.

2. Wilderness

Wilderness designation allows uses specific in the Wilderness Act of 1964 including non-motorized recreation, construction and maintenance of trails, livestock grazing, and maintenance of existing water developments. Use of mechanized equipment is not allowed except for emergencies. Wilderness areas are closed to mineral entry subject to valid existing rights on the date of enactment.

The Pine Valley Mountain, Ashdown Gorge, and Box-Death Hollow Wildernesses would be managed to protect the wilderness resources. The Box-Death Hollow Wilderness is pristine and would be managed to maintain that condition, therefore, trails would not be constructed inside the boundaries. The Ashdown

Gorge would be managed for day hikes to compliment Cedar Breaks National Monument. Pine Valley Mountain would be managed with existing trails and include some reconstruction and relocation. The Forest has a total of 555,390 acres of land that met the minimum requirements for wilderness that were not included in the Utah Wilderness Bill. As shown in the following display, most of these acres would maintain their present qualities through the period until the first revision of the plan (20 to 15 years).

Alternative	Est. Percent of Present Areas Meeting Minimum Wilderness Qualities After First Decade
A	95
B	97
C	100
D	95
E	100
F	90
G	92
H	90

Irreversible and Irretrievable Commitment of Resource

As land becomes roaded or the vegetation becomes manipulated, it may no longer be considered for wilderness. For the entire 50 year planning period, the Non-Market, Constrained Budget and Composite Alternatives maintain the greatest amount of land available for wilderness designation. The Market, RPA 80, and High Productivity Alternatives offer the least amount of land to be available for wilderness designation.

Minerals development and some special land uses on the Forest are not scheduled and cannot be predicted as to their effect on wilderness qualities. Additionally, natural disasters could occur requiring rehabilitation that would alter the wilderness resource.

3. Fish and Wildlife

a. Habitat Capability For Management Indicator Species

Habitat capability for the various management Indicator Species (MIS) is summarized in Table IV-5. Habitat sufficient to maintain minimum viable populations (MVP) of all MIS would be available through the planning period under all alternatives.

Aquatic habitat capability is expected to gradually decline under all alternatives due to accelerated eutrophication of major lakes and impacts of other resource activities. In all alternative except the Constrained Budget, the Forest Service would coordinate with out-service agencies and private land owners in the Panguitch Lake area in efforts to reduce eutrophication. Only under the Composite, the Non-Market and the High Productivity Alternatives would funding be sufficient to improve fish habitat in the lake and on the Forest to counteract habitat degradation caused by eutrophication. As the result of this work, fish habitat capability will gradually rise after the third decade in these alternatives. It will not return to current (1984) levels until after 2035, however.

Habitat capability for Bonneville cutthroat trout is expected to increase at least slightly under all alternatives. Under the low budget alternatives any habitat improvement dollars available would be directed toward endangered, threatened and sensitive species such as the Bonneville cutthroat trout. Under alternatives with high wildlife budgets, there may be a significant increase in habitat capability for Bonneville cutthroat trout.

Habitat capability for macroinvertebrates is dependent upon impacts on aquatic habitat from other resources. Under the High Productivity, 1980 RPA, and Market Alternatives, increase in road construction, timber harvest, and livestock grazing could decrease habitat capability for macroinvertebrate by increasing sediment delivery and degrading riparian ecosystem condition. Under the Constrained Budget, Non-Market, and Current Budget Alternatives, habitat capability for macroinvertebrates is likely to increase as the result of reduced impacts from other resources.

b. Minimum Viable and Maximum Potential Populations

Minimum viable populations (MVP) of all MIS would be supported through the planning period under the alternatives.

The only alternative that closely approaches maximum potential populations is the Non-Market Alternative. With the exception of pounds of fish and elk numbers, estimated maximum potential populations (assuming proper distribution) of all MIS would be reached by 2030. Maximum potential populations of resident trout, Bonneville cutthroat trout and macroinvertebrates would not be reached under any alternative.

c. Habitat and Species Diversity

Wildlife species diversity (species richness) is generally a function of habitat diversity, the greater the variety of habitat factors (vegetation type and structure, water, topography, etc.) the more habitat niches* likely to be present, and conversely, the more wildlife species could theoretically inhabit the area. Much of the Forest's inherent diversity would be unchanged irrespective of which alternative is chosen. The estimated effects of the various alternatives on vegetative diversity is summarized in Table IV-5.

The high market output alternatives, Market and High Productivity, would provide considerable habitat diversity as a result of vegetative manipulation. The usefulness of this diversity would be limited, however, because of poor distribution of seral stages*. Most of the overmature timber (both hardwood and softwood) would remain only in withdrawn (wilderness, research natural) areas or on unproductive timberlands while the younger, more productive seral stages would be concentrated in the available, capable, and suitable timberlands. Diversity induced by these alternatives would be further limited because habitat effectiveness* would be decreased because of increased road densities and decreased wildlife cover associated with high timber and range outputs. Road densities in excess of two miles per square mile should be avoided under any alternative because of the negative effects on the wildlife.

The Non-Market Alternative provides the best mix of habitat diversity and habitat effectiveness. Most of the vegetative manipulation work done under this alternative would be for the sake of providing wildlife habitat

TABLE IV-5
SUMMARY OF MAJOR WILDLIFE OUTPUTS AND EFFECTS BY ALTERNATIVE

Alternative	Mid-Point of Decade	MWFUDS		M$	MIS Habitat Capability						
		Terr.	Fish	Benefits	Mnos Deer	Nos Elk	Pairs Goshawks	M Pairs C.Flick.	Pairs Chats	Nos Turks	M Lbs Fish
A Current Program	1990	14.8	5.9	494	50.8	1,530	68	17.2	1,210	275	214.9
	2000	15.8	6.3	526	53.5	1,800	68	17.2	1,210	290	209.3
	2010	15.8	6.2	524	53.5	1,800	68	17.2	1,210	300	203.1
	2020	15.8	6.0	520	53.5	1,800	68	17.2	1,210	315	196.5
	2030	15.8	5.8	517	53.5	1,800	68	17.2	1,210	325	190.0

Compare with min. viable pop. levels and Max. habitat potential	Compare with UDWR goals and objectives	Plant and animal comm. diversity	Effects on T.E.&S. Species
This alternative provides for habitat capability above minimum viable populations (MVP) of all management indicator species (MIS).	Population goals are only firm for big game species. This alternative exceeds UDWR objective for deer by the year 1990. Object- for elk would not be met during the planning period. 1/	This alternative will enhance existing inherent vegetative diversity in a variety of vegetative communities. Timber, Range, and Wildlife activities will provide for maintenance of current moderate levels diversity.	UPD*: No negative effects. Bald Eagle: No negative effects. *Asl. peri**: No negative effects Bonn Cut. Trout: No negative effects. Sensitive plants: No effects.

Alternative	Mid-Point of Decade	MWFUDS		M$	MIS Habitat Capability						
		Terr.	Fish	Benefits	Mnos Deer	Nos Elk	Pairs Goshawks	M Pairs C.Flick.	Pairs Chats	Nos Turks	M Lbs Fish
B Preferred (Composite)	1990	14.8	7.0	514	50.8	1,530	68	17.2	1,210	275	215.7
	2000	15.9	8.5	569	53.5	2,000*	72	17.2	1,390	300	212.6
	2010	15.9	7.9	558	53.5	2,000*	72	17.5	1,410	315	211.6
	2020	15.9	8.5	569	53.5	2,000*	74	17.5	1,450	325	212.2
	2030	15.9	8.5	569	53.5	2,000*	74	17.7	1,480	375	211.8

Compare with min. viable pop. levels and Max. habitat potential	Compare with UDWR goals and objectives	Plant and animal comm. diversity	Effects on T.E.&S. Species
Alternative will provide habitat capability above that required for MVP of all MIS and in most cases, higher populations than the Current Program Alt.	Alternative exceeds UDWR deer population goal by 1990. The elk goal would not be met during the planning period.	Alternative would provide diversity enhancement similar to Current Program.	UPD: No negative effects. Bald Eagle: No negative effects. *Asl. ceri.*: No negative effects. Bonn. Cut trout: No negative effects. Sensitive plants: No negative effects.

Alternative	Mid-Point of Decade	MWFUDS		M$	MIS Habitat Capability						
		Terr.	Fish	Benefits	Mnos Deer	Nos Elk	Pairs Goshawks	M Pairs C.Flick.	Pairs Chats	Nos Turks	M Lbs Fish
C Constrain Budget	1990	11.1	5.7	407	41.4	1,530	68	17.2	1,150	275	216.6
	2000	12.7	5.8	454	48.2	1,500	75	17.4	1,120	285	210.5
	2010	12.1	5.6	432	45.5	1,500	80	18.2	1,100	295	204.4
	2020	12.1	5.5	430	45.5	1,500	80	18.5	1,090	300	198.6
	2030	12.1	5.4	428	45.5	1,500	80	18.4	1,060	300	192.9

Compare with min. viable pop. levels and Max. habitat potential	Compare with UDWR goals and objectives	Plant and animal comm. diversity	Effects on T.E.&S. Species
This alternative provides for habitat capability above that required to support minimum viable populations of all MIS, but for most species, populations will be lower than under the Current Program Alt.	This alternative falls short of meeting the UDWR population goal for 1990 for deer by 17% and for elk by 47%. Populations gradually increase throughout the planning period so that deer are -90% and elk are -48% in 2030.	Decreased timber harvest and range veg. manipulation will allow gradual progression to vegetative potential on most sites with a resulting decrease in community diversity.	UPD: No negative effects. Bald Eagle: No negative effects. *Asl. peri*: possible negative effects (grazing) Bonn. cut. trout: Poss. negative effects. Sensitive plants: Possible negative effects (grazing).

Alternative	Mid-Point of Decade	MWFUDS		M$	MIS Habitat Capability						
		Terr.	Fish	Benefits	Mnos Deer	Nos Elk	Pairs Goshawks	M Pairs C.Flick.	Pairs Chats	Nos Turks	M Lbs Fish
D Current Budget	1990	15.1	6.1	414	41.4	1,530	68	17.2	1,210	275	214.2
	2000	14.2	6.6	509	53.5	1,800	68	17.2	1,210	285	209.5
	2010	13.8	6.5	497	51.7	1,800	69	17.5	1,210	295	203.3
	2020	13.8	6.3	491	51.7	1,800	70	17.8	1,810	300	197.3
	2030	13.8	6.1	488	51.7	1,800	72	18.0	1,810	300	191.2

Compare with min. viable pop. levels and Max. habitat potential	Compare with UDWR goals and objectives	Plant and animal comm. diversity	Effects on T.E.&S. Species
This alternative is one of the better alternatives for nongame MIS. Population levels of big game species are considerably below those of Current Program, but well above MVP.	Deer population is 17% below the 1990 population goal and elk is 47% below. In 2030, deer are 4% above goal, while elk is 38% below the goal populations.	This alternative will provide vegetative diversity through timber harvest and range reveg. as in Alt A, however, decreased Project activities will provide for maintenance current moderate levels diversity.	UPD: No effects. Bald Eagle: No negative effects. *Asl. peri*: Possible negative effects (grazing). Bonn. cut. trout Possible negative effects (grazing). Sensitive Plants Possible negative effects (grazing).

1/ UDWR and RPA 1980 elk population goal is 2,900 elk by the year 1990.
*This is only an estimation, until elk plans are completed.

Alter-native	Mid-Point of Decade	MWFUDS Terr.	MWFUDS Fish	M$ Benefits	MIS Habitat Capability Mnos Deer	Nos Elk	Pairs Goshawks	M Pairs C.Flick.	Pairs Chats	Nos Turks	M Lbs Fish
E	1990	15.1	7.1	501	51.7	1,530	68	17.2	1,390	300	220.8
Non-	2000	16.8	8.7	579	56.0	3,000	74	17.5	1,410	325	214.9
Market	2010	16.8	8.0	567	56.0	3,000	74	17.9	1,450	375	216.0
	2020	16.8	8.7	579	56.0	3,000	74	18.5	1,490	450	217.0
	2030	16.8	8.7	579	56.0	3,000	74	19.0	1,515	500	217.0

Compare with min. viable pop. levels and Max. habitat potential	Compare with UDWR goals and objectives	Plant and animal comm. diversity	Effects on T.E.&S. Species
This alternative provides for habitat capability to support near maximum populations of most MIS. All populations will be supported at levels well above minimum viable.	In 1990, the deer population is 4% above the UDWR goal, with elk 47% below. By the year 2030, the deer population exceeds the goal by 13% and the elk population is 21% below the goal.	Veg. and resulting animal diversity in this alternative will be provided largely by habitat manipulation projects. Softwood timber, harvest will be done compared to Alt. A. As per harvest will also be down, but will remain at levels adequate to improve habitat diversity.	UPD: Considerable beneficial effects Bald Eagle: Beneficial effects Ast. peri.: Beneficial effects. Bonn. cut. trout: Considerable beneficial effects. Sensitive plants: Beneficial effects.

Alter-native	Mid-Point of Decade	MWFUDS Terr.	MWFUDS Fish	M$ Benefits	MIS Habitat Capability Mnos Deer	Nos Elk	Pairs Goshawks	M Pairs C.Flick.	Pairs Chats	Nos Turks	M Lbs Fish
Q	1990	15.1	7.0	521	51.7	1,530	68	17.2	1,150	275	214.9
RPA	2000	16.2	8.5	562	54.8	1,900	66	16.8	1,150	295	211.6
1980	2010	16.2	7.8	550	54.8	1,900	65	16.6	1,150	310	210.5
	2020	16.2	8.5	562	54.8	1,900	65	16.8	1,120	325	210.9
	2030	16.2	8.5	562	54.8	1,900	65	16.1	1,090	350	210.3

Compare with min. viable pop. levels and Max. habitat potential	Compare with UDWR goals and objectives	Plant and animal comm. diversity	Effects on T.E.&S. Species
This alternative provides near maximum habitat capability for economically important species. All MIS will be supported at levels above minimum viable population levels.	Deer population is 4% above the 1990 population goal and elk is 47% below. By 2000 the deer population exceeds goal by 10%. Elk population is 47% below objective in 1990 and 34% below in 2030.	This alternative will provide diversity enhancement similar to Alt. A. Increased diversity due to wildlife projects wil be higher under this alt. because of higher budgets.	UPD: No negative effects. Bald Eagle: No negative effects. Ast. peri.: No negative effects. Bonn. cut. trout: No negative effects. Sensitive plants: No effects.

Alter-native	Mid-Point of Decade	MWFUDS Terr.	MWFUDS Fish	M$ Benefits	MIS Habitat Capability Mnos Deer	Nos Elk	Pairs Goshawks	M Pairs C.Flick.	Pairs Chats	Nos Turks	M Lbs Fish
F	1990	12.3	6.4	437	41.4	1,530	68	17.2	1,150	275	214.3
Market	2000	15.2	7.3	528	52.1	1,500	67	16.7	1,120	260	209.9
	2010	15.2	7.1	525	52.1	1,500	65	16.4	1,100	250	203.8
	2020	15.2	7.0	523	52.1	1,500	64	16.1	1,090	235	197.4
	2030	15.2	6.8	519	52.1	1,500	62	15.8	1,090	225	190.9

Compare with min. viable pop. levels and Max. habitat potential	Compare with UDWR goals and objectives	Plant and animal comm. diversity	Effects on T.E.&S. Species
This alternative provides for populations of all MIS above MVP levels, but considerably below the levels of the Current Program Alt.	This alternative falls short of the UDWR elk goals throughout the planning period. The deer population is 17% below and the elk population is 47% below in 1990 and in 2030 the deer population is 5% above and the elk population is 48% below.	Increased timber harvest and range reveg. activity will increase diversity however, increased roading and activity to to accommodate market outputs will limit habitat effectiveness in many areas.	UPD: Possibly some habitat loss. Bald Eagle: No effects. Ast. peri.: Possible negative effects (grazing). Bonn. cut. trout: Possible negative effects. Sensitive plants: Possible negative effects.

Alter-native	Mid-Point of Decade	MWFUDS Terr.	MWFUDS Fish	M$ Benefits	MIS Habitat Capability Mnos Deer	Nos Elk	Pairs Goshawks	M Pairs C.Flick.	Pairs Chats	Nos Turks	M Lbs Fish
H	1990	12.2	6.0	430	41.4	1,530	68	17.2	1,120	230	213.0
RPA	2000	14.6	6.5	499	50.0	1,500	65	16.6	1,100	220	207.0
1985	2010	14.3	6.4	490	49.0	1,500	60	16.0	1,090	210	200.4
	2020	14.1	6.2	480	48.0	1,500	56	15.0	1,060	195	193.4
	2030	13.2	6.0	455	45.0	1,500	52	14.0	1,030	175	186.5

Compare with min. viable pop. levels and Max. habitat potential	Compare with UDWR goals and objectives	Plant and animal comm. diversity	Effects on T.E.&S. Species
Production of commodities at levels prescribed by this alternative would almost certainly result in populations of some MIS below MVP at some date after 2035.	This alternative falls substantially below the UDWR objectives throughout the planning period. 1990 population of deer and elk are 17% and 47% below the objective and 2030 populations are 16% and 48% below.	Effects of this Alternative on plant and animal diversity would he similar to those of Alt. F.	UPD: Possibly some habitat loss. Bald Eagle: No effects. Ast. peri.: Possible negative effects (grazing). Sensitive plants: Possible negative effects (grazing).

*UPD: Utah Prairie Dog

diversity. Road densities would be kept to a minimum and wildlife cover would be retained.

The Current Program Alternative, the Composite Alternative, the Current Budget Alternative, and the RPA 1980 Alternative would all provide similar habitat diversity, vegetative manipulation, and therefore, induced habitat diversity*, would decrease in the latter part of the planning period under the Current Budget Alternative. Timber harvest is identical under the Current Program and Composite Alternatives. Induced diversity due to timber harvest would therefore be the same for these alternatives. Range management would receive somewhat more emphasis under RPA 1980 Alternative than under Current Program and Composite Alternatives. Induced diversity due to range revegetation activities would therefore be greater under RPA 1980.

The Constrained Budget Alternative would provide for less diversity enhancement than any other alternative. Budgets in timber, range, and wildlife would be so small that only highest priority projects could be funded.

d. Threatened, Endangered and Sensitive Species

Utah Prairie Dog. All alternatives except the Constrained Budget may affect the Utah prairie dog either positively or negatively. It is estimated that because of budget reductions called for under the Constrained Budget, no habitat improvements would be possible to allow prairie dog population increases. The Forest would probably discourage additional transplant efforts. Areas where prairie dogs currently exist, however, would receive sufficient protection from grazing, to preserve current populations.

The Current Program, the Current Budget, and the RPA 1980 alternatives would have no negative effects on prairie dogs, and probably would have some beneficial effects. The transplant program would continue under all three alternatives. Under Current Program and RPA 1980, money should be available on a regular basis for habitat improvement work. Under Current Budget, money would probably be available on an occasional basis for habitat improvement.

Under the Composite and Non-Market alternatives, effects on prairie dogs would be beneficial. The transplant program would continue and a regular program of habitat improvement could be planned and accomplished.

Under the Market and High Productivity Alternatives, it is likely that some habitat loss would occur as a result of maximization of grazing. Current populations would be protected, however.

Bald Eagles. The Constrained Budget, the Market, and the High Productivity Alternatives would have no effect, either positively or negatively on bald eagles. Currently occupied habitat would be protected from disturbing management activities, but no habitat enhancement projects would be planned, either because of lack of funding (Constrained Budget), or redirection of priorities (Market and High Productivity).

The Current Program, the Composite, the Current Budget and the RPA 1980 alternatives would have no negative effects on bald eagles and could possibly have some beneficial effects. Currently occupied habitat areas would be protected and habitat enhancement could be accomplished on an occasional basis. Lower levels of timber harvest and grazing (than under Market and High Productivity) would also lessen the chances that the eagle's hunting habitat would deteriorate.

The Non-Market alternative would be beneficial to bald eagles. Currently occupied roosting and hunting habitat would be protected and enhanced where possible, and areas of potential habitat would be managed to encourage use by eagles. Market outputs would be managed to enhance eagle hunting habitat.

Astragalus perianus (Rydberg milkvetch). Constrained, Current Budget, Market, and High Productivity Alternatives could possibly have negative effects on A. perianus due to grazing. Under the Constrained and Current Budget adequate protection for the species could not be provided because of low budgets. Under the Market or High Productivity Alternatives the lack of adequate protection would be due to increased intensity of grazing.

The Current Program, the Composite and RPA 1980 alternative would have no negative effects on A. perianus. Grazing administration and intensity of use under these alternatives would be such that known populations of the species could be protected.

The Non-Market Alternative could enhance populations of A. perianus, since grazing intensity would be reduced.

Bonneville cutthroat trout. Presently confirmed occurrence on the Forest is limited to three streams; Water Canyon, Reservoir Canyon and Deer Creek. The Current Program, Current Budget, and the RPA 1980 alternatives are predicted to have no negative effects on the species. These alternatives could have beneficial effects should money be available for habitat improvement projects or if grazing were managed to protect the streams where the Bonneville cutthroat trout occur.

The Non-Market and Composite Alternatives would have beneficial effects on Bonneville cutthroat trout. Habitat enhancement projects would be accomplished in all streams where the fish presently occur. Inventory work would discover other populations of the species, or streams where the fish could be transplanted.

Bonneville cutthroats could be negatively impacted under the Constrained Budget, the Market, or the High Productivity alternatives. Most of the impacts would be a result of increased livestock activity in and around the streams.

Sensitive plants. Table III, Chapter III lists the plants which are currently officially classified as "sensitive" on the Dixie National Forest. The Constrained Budget, the Current Budget, the Market, and the High Productivity alternatives could negatively impact sensitive plant species. The negative impacts would be primarily as a result of market outputs; i.e., timber and grazing, and/or a lack of money to provide adequate protection for these species.

The Current Program, the Composite and the RPA 1980 alternatives are estimated to have no effect, either positively or negatively on sensitive plant species. Both programs would provide for administration of market output activities sufficient to protect existing, known populations of sensitive species. Fundswould not be available to allow for any appreciable habitat improvement for sensitive species.

Under the Non-Market alternative, sensitive species would benefit from increased protection, reduced market outputs and from project activities designed to enhance and increase habitat for these plants.

e. Wildlife Outputs (Projected Demand)

Estimated hunting and fishing and nonconsumptive wildlife and fish use under each alternative is summarized in Figure IV-1.

The high outputs of the Non-Market alternative, are a reflection of near maximum wildlife populations resulting from an intensive habitat improvement program and de-emphasis of market outputs which have the potential of adversely affecting wildlife habitats. Numbers of wildlife and fish user days (WFUDS) are considerably lower under all other alternatives.

Early in the planning period, the next best wildlife outputs are realized from the RPA 1980 alternative. After 2010, however, the outputs from the Current Program and Composite alternatives exceed those of RPA 1980. At the end of the planning period, the estimated outputs from the Composite would be slightly higher than those of the Current Program alternative.

After 2000, outputs from the Current Budget Alternative would begin to drop due to lowered populations of some wildlife species. This is a result of decreased habitat improvement and maintenance and fewer projects which would provide habitat diversity.

Outputs to be realized from the Market and the High Productivity alternatives are estimated to be the same, and would be lower than the Current Budget outputs. Although these alternatives provide considerable habitat diversity, it is concentrated and limited in usefulness. These alternatives emphasize market outputs at the expense of wildlife outputs.

The Constrained Budget alternative would have the lowest wildlife outputs. This is due in part to the lack of any direct wildlife habitat improvement program under this alternative and also to the fact that access to the Forest by recreationist would become more difficult as the road and trail network would deteriorate from lack of maintenance.

Fisheries outputs do not follow the same trend as wildlife outputs under all alternatives. The highest fisheries outputs would still be produced by the Non-Market Alternative followed by the Composite Alternative with the second highest level of outputs. Outputs from the 1980 RPA alternative would be slightly higher than present outputs. The 1985 RPA Alternative would have the lowest fisheries outputs with Current Program, Constrained Budget, Current Budget, and Market Alternatives also producing decreased fisheries outputs.

The difference between fisheries and wildlife outputs of the various alternatives is based on the fact that aquatic habitat is more sensitive to impacts from increased resource activity than is terrestrial habitat. Both aquatic and terrestrial habitat can be improved through improvement projects,but aquatic habitat can be degraded more rapidly by other resource activities under high commodity output alternatives.

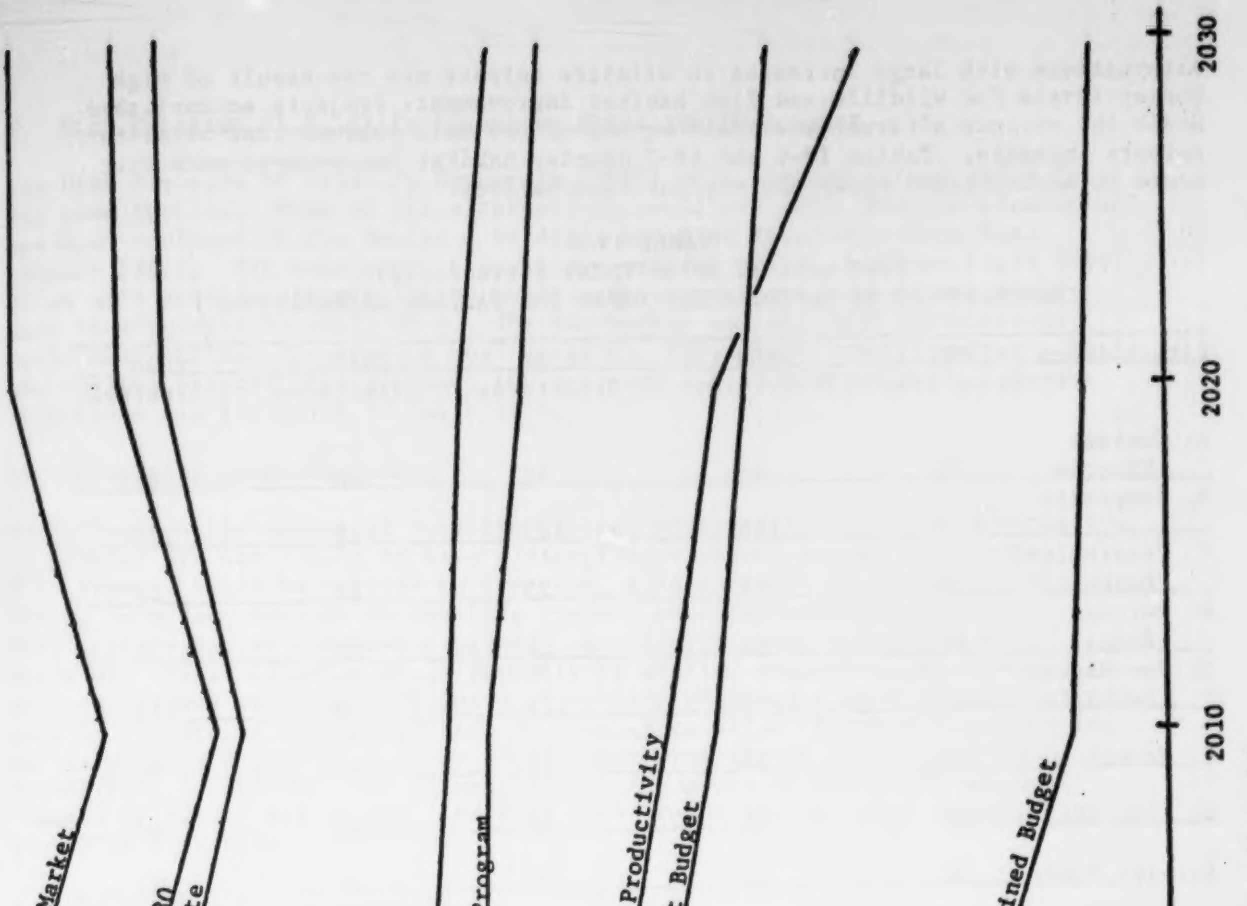


FIGURE IV-1
COMPARISON OF WILDLIFE AND FISH USER DAY
OUTPUTS BY ALTERNATIVE AND DECADE

Alternatives with large increases in wildlife outputs are the result of high budget levels for wildlife and fish habitat improvement. Projects accomplished under the various alternatives would be one of the main reasons that wildlife outputs increase. Tables IV-6 and IV-7 display habitat improvement work that would be accomplished under the various alternatives.

TABLE IV-6
FISH HABITAT IMPROVEMENT (Structures) ESTIMATED TO BE ACCOMPLISHED UNDER THE VARIOUS ALTERNATIVES

Alternatives	1990 Structures	2000 Structures	2010 Structures	2020 Structures	2030 Structures
A. Current Program	42	42	42	42	42
B. Composite	125	125	125	125	125
C. Constrained Budget	20	25	25	25	20
D. Current Budget	52	52	52	52	52
E. Non-Market Emphasis	125	125	125	125	125
F. Market	35	35	35	35	35
G. 1980 RPA	40	40	40	40	40
H. High Prod.	52	52	52	52	52

TABLE IV-7
TERRESTRIAL HABITAT IMPROVEMENT (Acres & Structures) ESTIMATED TO BE ACCOMPLISHED UNDER THE VARIOUS ALTERNATIVES

Alternatives	1990 Acres/ Structures	2000 Acres/ Structures	2010 Acres/ Structures	2020 Acres/ Structures	2030 Acres Structures
A. Current Program	830	830	830	830	830
	10	12	12	12	12
B. Composite	900	900	950	900	900
	15	17	17	18	18
C. Constrained Budget	50	50	50	50	50
	2	2	2	2	2
D. Current Budget	800	775	750	700	600
	10	10	8	6	5
E. Non-Market Emphasis	960	1255	1172	1187	1172
	16	26	27	32	33
F. Market	830	750	700	650	600
	10	10	10	10	10
G. 1980 RPA	830	750	700	650	650
	15	15	15	15	15
H. High Prod.	830	750	700	650	600
	17	17	19	21	21

f. Utah Division of Wildlife Resources Goals and Objectives

The Utah Division of Wildlife Resources (UDWR) only has population goals for big game species. None of the alternatives would meet the 1990 elk population goals as outlined in the Region 4 Wildlife and Fish Assessment Data Base (August 1981). Elk management plans are now being prepared at the field level which will provide elk population goals. These goals will be approximately what is displayed in Table IV-5. The Non-Market and RPA 1980 Alternatives, would meet the deer population goal by 1990. Table IV-5 summarizes how closely the various alternatives approach the deer and elk population goals. Forest objectives are displayed in Table IV-5.

g. Effects on Other Resources

Variations in the amount of wildlife habitat manipulation from one alternative to another are not likely to have a significant impact on any other resource. Most impacts would be related to temporary area closures to protect wildlife during important periods in the life cycle: breeding/spawning, fawning/calving; or seasonal closures i.e., winter range areas closed to vehicles. These closures would probably be applied regardless of which alternative was selected. Closures of certain areas on a more permanent basis, such as closure of a riparian area to grazing to allow recovery of vegetation on streambanks might occur under the Current Program the Composite, the Non-Market, or the RPA 1980 alternatives. A closure of this sort would be limited in extent and is not likely to cause reduction in total livestock use within an allotment.

h. Unavoidable Adverse Impacts

Alternatives which provide for high WFUD outputs also have the potential of causing resource damage from rutted roads, unwanted roads, damaged facilities, increased poaching*, etc. Mitigation of these types of damage would come largely in the form of increased law enforcement and/or emphasis on public education in the development of a sound conservation ethic. High market output alternatives, with their associated extensive road networks and range revegetation/timber harvest programs, would increase stream sedimentation and decrease big game habitat effectiveness in some areas. Mitigation of these impacts could include road closure, leaving vegetation screens along open roads, and leaving adequate unmanipulated buffer strips along streams. Some riparian areas would continue to deteriorate under the high market output alternatives due to increased livestock grazing pressure in these areas. This deterioration would also be experienced under the Constrained and Current Budget alternatives because of a lack of administration in these areas. Mitigation could take the form of fencing the riparian areas to exclude livestock, herding the livestock to keep them from over using the riparian areas, or changing the class of livestock. The low budget alternatives, with their attendant small programs of vegetative manipulation would allow a gradual progression toward old-growth habitats. This would adversely impact wildlife species that favor early successional habitats. Mitigation could includeaccomplishing some vegetative manipulation to create early successional stages using low cost methods i.e., burning.

i. Short-Term Uses vs. Long-Term Productivity

Long-term productivity would be improved by the Current Program, the Composite, the Non-Market, or the RPA 1980 alternatives, since they all include budgets that allow for at least some wildlife habitat improvement work. High intensity, short-term uses of the timber and range resources, such as would be experienced under the Market and High Productivity alternatives could impair the long-term productivity of some of the Forest's wildlife populations. It is unlikely that wildlife use under any alternative would reduce the long-term productivity of the Forest.

j. Irreversible and Irretrievable Commitment of Resources

Closure of certain areas to grazing or timber harvest to protect wildlife values would be an irretrievable commitment of resources. This would be likely to happen to a greater or lesser extent under the Current Program, the Composite, the Non-Market or RPA 1980 alternatives, but unlikely under any other alternative. There would be no irreversible commitment of resources associated with wildlife habitat treatment by prescribed burning could be an irretrievable commitment of resources.

4. Range

Under the Current Program, the Composite, and the Current Budget, animal unit month (AUM) outputs would remain constant at 115,000 AUMS annually. Under the Constrained Budget, AUM outputs would start at 110,000 in 1990 and gradually drop to 100,000 by 2030. Complete take over of improvement construction and maintenance by permittees could slow or stop this gradual reduction in AUMS. The Non-Market would have constant outputs of 90,000 AUMS annually throughout the planning period. Outputs under the RPA '80, Market and High Productivity would gradually increase throughout the planning period. Under the Market Alternative, we would be producing about 119,000 AUMS annually by 1990 and 123,000 by 2030. Under RPA 80 Alternative, we would produce 117,000 in 1990 increasing to 119,000 in 2030. Under the High Productivity Alternative, we would be producing 119,000 AUMS by 1990, increasing to 139,000 AUMS by 2030.

Table IV-8 displays the numbers of AUMs that will be produced during each decade of the planning period under the various alternatives.

TABLE IV-8
GRAZING CAPACITY (in thousands of AUMs)
ON THE DIXIE NATIONAL FOREST BY PLANNING ALTERNATIVE

Alternative	1990	2000	2010	2020	2030
Current (A)	115	115	115	115	115
Composite (B)	115	115	115	115	115
Constrained (C)	110	107	105	103	100
Current Budget (D)	115	115	115	115	115
Non-Market (E)	90	90	90	90	90
Market (F)	117	117	118	118	119
RPA-80 (G)	119	120	121	122	123
High Prod (H)	119	124	130	136	139

Allotment management plans have been prepared and are in effect on all allotments on the Dixie and the current grazing capacity of 115,000 AUMs has been more or less the same for the last ten years. Any increase in outputs as discussed in the RPA 1980, the Market, or the RPA 1985 Alternatives would require completion of additional range revegetation projects and increasing reliance on transitory range created by timber harvest. Also, because of the preference of cattle for riparian areas, they would be subjected to additional grazing pressure in order to meet the AUM output targets. Even though the high output alternatives would include revegetation projects to increase range capacity, the increased use is likely to cause changes in range condition and trend. Table IV-9 shows the estimated change in the number of suitable acres by condition and trend.

TABLE IV-9
ESTIMATED RANGE ANALYSIS DATA SUMMARY BY PLANNING ALTERNATIVE AND BY DECADE

Change in suitable acres (in thousands) in each condition class by alternative and by decade.

	1990			2000			2010			2020			2030		
Alternative	Good	Fair	Poor	Good	Fair	Poor	Good	Fair	Poor	Good	Fair	Poor	Good	Fair	Poor
Current Program	263	324	100	263	346	78	274	357	56	282	371	34	295	380	12
Composite	268	318	101	272	337	78	278	365	56	289	365	33	292	384	11
Constrained Budget	258	318	111	257	319	111	255	320	112	250	325	112	240	335	112
Current Budget	263	318	106	261	330	96	260	341	86	258	353	76	255	366	66
Non-Market	269	322	96	277	344	66	285	366	36	295	386	6	340	347	0
Market	263	313	111	261	315	111	261	315	111	259	317	111	258	318	111
RPA 1980	263	313	111	263	313	111	263	314	110	263	314	110	263	314	110
High Prod.	260	316	111	255	321	111	250	326	111	245	330	112	237	339	112

Trend of suitable acres (in thousands) by alternative and by decade.

	1990			2000			2010			2020			2030		
Alternative	Up	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up	Down	Stable	Up	Down	Stable
Current Program	424	0	263	424	0	263	424	0	274	424	0	282	424	0	295
Composite	419	0	268	417	0	272	412	0	278	408	0	289	404	0	292
Constrained Budget	0	429	258	0	430	257	0	432	255	0	437	250	0	447	240
Current Budget	424	0	263	426	0	261	477	0	260	429	0	258	432	0	255
Non-Market	418	0	269	410	0	277	402	0	285	392	0	312	347	0	340
Market	424	0	263	426	0	261	426	0	261	426	0	259	428	0	258
RPA 1980	424	0	263	424	0	263	424	0	263	424	0	263	424	0	263
High Prod.	0	3	684	0	5	679	0	5	679	0	6	678	0	6	678

Acres within the various vegetation types will remain the same under all alternatives; as will the number of acres in each livestock suitability class.

a. Wild Horses

All alternatives provide for current use by wild horses (300 AUMS) annually.

b. Riparian

Riparian areas would be adversely impacted by the high output alternatives (RPA 1980, High Productivity, and Market) because of increase grazing in these areas.

Riparian area practices and grazing pressure would continue at current levels under Current Program Alternative. Under this alternative, funds would be available on at least an occasional basis for rehabilitation of selected riparian areas. More emphasis will be placed on the restoration of degraded reparian areas in the Composite Alternative. It is not likely that the Constrained Budget or the Current Budget Alternatives would contain any funding for riparian area rehabilitation.

Decreased AUM outputs as prescribed in the Constrained Budget and Non-Market Alternatives would reduce grazing pressure on riparian areas somewhat. Cattle prefer riparian areas however, and under the Constrained Budget Alternative, where funding for grazing administration would be limited, riparian areas might receive heavier use than under the high output alternatives. Under the Non-Market Alternative, deteriorated riparian areas would be protected from overgrazing by exclusion from the areas, by herding, by changing the class of livestock, or by a combination of these methods.

c. Threatened, Endangered, and Sensitive Plants

Table III-15, Chapter III, displays the federally classified and Region 4 sensitive plants that occur on the Dixie National Forest.

The Non-Market Alternative would lessen the likelihood of disturbance to threatened, endangered, and sensitive (T,E,& S) plants because livestock numbers on the Forest would be reduced. Conversely, the likelihood of disturbance of T,E,& S plants would be higher under the RPA 1980, the Market, and the High Productivity ALternatives because of increased AUM outputs. Under all alternatives, the Forest is legally obligated (FSM 2670.21 through 2670.32) to maintain viable populations of T,E,&S plants.

d. Noxious Weeds

As discussed in Chapter III, the only noxious weeds that are currently a problem on and adjacent to the Forest are Scotch thistle, musk thistle, and Canada thistle. The Constrained Budget and Current Budget Alternatives would not contain funding to control noxious weeds unless infestations were severe. Budgets in the other alternatives would be sufficient to keep these species under control, but under no alternative is it likely that Scotch thistle would be eradicated from the Forest.

e. Projected Public Use (Demand)

Livestock forage production in thousands of AUMs under each alternative is displayed in Table IV-8. Under the present grazing fee system, it is assumed that there is a local demand for all of the AUMs the Forest is capable of producing.

f. Effects on Other Resources

Wildlife. Range revegetation projects such as spraying, burning, or browse control could have an adverse short-term effect on deer winter range if critical forage or cover were destroyed. The high range output alternatives; Market, RPA 1980, and High Productivity would convert and maintain areas in grass to provide cattle forage. In some cases this would be done at the expense of browse or cover species used by wintering big game. In many instances the revegetation work would be beneficial, rather than harmful to some wildlife species. Water developments constructed for livestock are also available to wildlife.

Fences can have a long-term effect on wildlife. Of the big game species, pronghorn have the most trouble negotiating fences. They can also be obstacles for deer and elk, especially in fawning and calving areas. Alternatives in which range outputs are increased over current would have the largest increases in fence construction, and have the most potential of creating problems. Fortunately, there are a number of fence designs that minimize, if not eliminate the adverse impacts on wildlife.

There is some degree of competition between livestock and wildlife for forage. The diets of cattle and elk overlap considerably. There is also dietary overlap between sheep and mule deer. When populations of certain species, i.e. rabbits or prairie dogs, are high enough, they can consume a large amount of forage. The forage base on the Forest has finite limitations. In general, the larger the number of livestock using the Forest, the smaller the wildlife populations will be.

Riparian. Riparian ecosystems are important to many species of wildlife. Livestock, especially cattle, make maximum use of riparian areas for both grazing and resting. In both cases the main "attractions" are lush vegetation and availability of water. The RPA 1980, the Market, and the High Productivity Alternatives provide the highest range outputs, and as such, would put the most pressure on riparian areas. Wildlife species dependent on riparian ecosystems would be adversely affected to a greater or lesser extent by these alternatives.

Heavy livestock use of riparian areas decreases water quality when protective vegetation is trampled and grazed or browsed, resulting in increased sedimentation and higher water temperatures. Higher than normal nutrient loads are experienced in water bodies where livestock congregate and defecate. This decreased water quality would adversely affect fish populations and habitat, and could occur under any alternative, although it is most likely under the high range output alternatives (Market, RPA 80, or High Productivity).

Soils in riparian areas would be susceptible to compaction and erosion under all alternatives. Wet soils would be easily compacted by concentrated livestock use. Adverse effects to soils are most likely to occur under the high range output alternatives.

Timber. Some use of transitory range would occur under all alternatives. The most use would occur under the High Productivity Alternative, with slightly less under RPA 1980, and still less under the Market Alternative. The lower the AUM outputs of a given alternative, the less use it probably makes of transitory range. There would be very little or no use of transitory range under the Non-Market Alternative. Use of transitory range by livestock would adversely affect regeneration of trees because of trampling and browsing.

Recreation. Most developed recreation sites are fenced to exclude livestock, but they occasionally get in anyway. The more livestock on the Forest, the more likely this is to occur.

Dispersed recreation sites are seldom fenced to exclude livestock, and may be heavily used at certain times. Conflicts would need to be resolved on an individual case basis.

Soil. Livestock activity would have no overall positive effects on the soil. The degree of negative impact would vary with livestock numbers and how well those animals were managed. For example, even though livestock numbers would be lower under the Constrained Budget Alternative than under the Current, Composite, or Current Budget Alternatives, impacts on the soil are reckoned to be greater. Forest Service Management would be considerably less, with developments (water, fences) falling into disrepair. "Policing" of the permittees would decrease, allowing poor range management practices such as salting on water or bedding in the same area more than one night.

Water Quality. The quality of water would be affected much the same way as the soil resource. Increased livestock numbers and/or decreased management would result in heavier use of riparian zones and wet meadows and corresponding decrease in water quality.

Vegetation. If range revegetation projects are not taken into account, the effects of livestock grazing on vegetation are negative. Again, the degree of impact is directly related to the intensity of grazing.

Table IV-9A Summarizes the effects of the range management alternatives on the various resources. Possible mitigation of negative impacts which might occur under some or all of these alternatives has not been taken into account in the construction of this table.

TABLE IV-9a
EFFECTS OF RANGE MANAGEMENT ALTERNATIVES ON OTHER RESOURCES

	Wildlife	Riparian Habitat	Timber	Recreation	Soil	Water Quality	Vegetation
Current (A)	+1	-1	0	0	-1	-2	0
Composite (B)	+1	-1	0	0	-1	-1	0
Constrained (C)	0	-3	0	-1	-2	-3	-2
Current Bud.(D	0	-2	0	0	-1	-2	-1
Non-Mkt. (E)	+1	0	0	0	0	0	0
Market (F)	-4	-4	-1	-1	-2	-3	-4
RDA 80 (G)	-2	-3	-1	-1	-2	-3	-2
High-Prod. (H)	-5	-5	-1	-1	-3	-3	-4

Unavoidable Adverse Impacts. Localized overgrazing could occur under all alternatives. The probability is highest under the High Productivity Alternative, next highest under the RPA 1980 Alternative, and next highest under the Market Alternative. Because the Non-Market Alternative produces the fewest AUMs, it also provides the least opportunity for overgrazing. Mitigation of overgrazing problems could come in the form of temporary removal of livestock or decreasing the stocking on problem areas. Areas where vegetation had been damaged would be replanted or reseeded, assuming damage did not include severe soil loss.

Degradation of water quality in some streams would continue. The amount of degradation and the likelihood of occurrence would be highest under those alternatives with the highest outputs or those with the lowest funding for program administration. Mitigation for this type of damage could include fencing of streams and/or providing livestock watering facilities away from the streams.

Under the high output alternatives, considerable problems could be encountered achieving adequate regeneration of harvested timber stands if these areas are used as transitory range. Fencing of regeneration areas would prevent livestock from damaging the young trees.

Short-Term Uses vs. Long-Term Productivity. Long-term range productivity would be improved by alternatives such as the Current Program, the Composite, RPA 1980, High Productivity, and Market since they would provide range management budgets adequate to accomplish and maintain range revegetation projects. Under the alternatives with reduced budgets, Constrained Budget and Current Budget, long-term productivity would suffer because of the Forest's inability to maintain range improvements. Long-term productivity of the range would be maintained under the Non-Market Alternative.

Irreversible and Irretrievable Commitment of Resources. Loss of soil on streambanks in areas where livestock concentrate and damage the riparian ecosystem would be irretrievable.

5. Timber

a. Probable Effects of Implementing Alternatives

Lands to be managed for timber production under each alternative were selected from the tentatively suitable lands. Lands classified as suitable are a function of the goals and objectives of the alternatives, so the number of suitable acres is different for each alternative, Table IV-10. Lands classified as not suitable were not selected for timber production.

TABLE IV-10
DISTRIBUTION OF LANDS CLASSIFIED AS SUITABLE FOR
PRODUCING TIMBER, BY ALTERNATIVE (THOUSAND ACRES)

	Alternative							
Land Class	Current Budget	Composite	Market	Non Market	High Prod.	RPA-80	Current Program	Constrained Budget
Available & Tentatively Suitable	331.2	331.2	331.2	331.2	331.2	331.2	331.2	331.2
Needed to meet Minimum Management Requirements	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
Timber Harvest Not Compatible w/ Alt. Goal	3.3	3.3	1.1	96.0	3.3	1.1	3.3	3.3
Tentatively Suitable Lands Available to FORPLAN	319.3	319.3	321.5	226.6	319.3	321.5	319.3	319.3
Assigned to No Harvest in FORPLAN, Not used in FORPLAN Solution	5.2	19.2	6.0	35.5	5.1	8.5	19.2	39.0
Lands Suitable For Timber Production	314.1	300.1	315.5	191.1	314.2	313.0	300.1	280.3

The number and distribution of stand age groups affects the long-term sustained yield calculation. The Forest should have approximately an equal acreage number of each age group. To obtain this age grouping and distribution it is important to regenerate harvested stands.

The primary means for achieving desired stand stocking and proper stand age distribution are timber sales, timber stand improvement, and reforestation. All alternatives provide for these treatments but at different levels. Site quality is inherent and will not change by alternative.

Allowable sale quantity varies with each alternative. The differences in yields are determined by the area suitable for timber production. Yield is also affected by the silvicultural activity used. Long-term sustained yield is the maximum sustained yield which can be expected once the Forest is in a fully managed state.

Alternative E, with the least amount of suitable land, has the lowest long-term sustained yield.

TABLE IV-11
ALLOWABLE SALE QUANTITY AND LONG-TERM SUSTAINED YIELD CAPACITY
(Average Annual Output, MMCF)

Alternative	Long Term Sustained Yield	Time Period 1990	2000	2010	2020	2030
A Current Program	8.2	5.157	5.101	5.146	5.168	5.213
B Composite	8.2	5.157	5.101	5.146	5.168	5.213
C Constrained Budget	7.7	4.525	4.525	4.525	4.525	4.547
D Current Budget	8.3	5.499	5.432	5.499	5.499	5.499
E Non-Market	6.0	4.426	4.737	4.782	4.804	4.826
F Market	7.7	5.825	5.869	5.891	5.914	5.936
G RPA-80	7.5	6.469	6.812	6.087	5.537	5.239
H High Prod.	8.1	6.680	5.073	5.059	6.263	7.790

Table IV-13 displays the base sale schedule by alternative for 150 years.

TABLE IV-12
BASE SALE SCHEDULE
(Million Cubic Feet Per Decade)

	Alternatives							
Decade	Current Budget	Market	Non Market	Composite	Current Program	Constrained Budget	RPA-80	High Prod.
1	54.99	58.25	44.26	51.57	51.57	45.25	64.69	66.80
2	54.32	58.69	47.37	51.01	51.01	45.25	68.12	50.73
3	54.99	58.91	47.82	51.46	51.46	45.25	60.87	50.59
4	54.99	59.14	48.04	51.68	51.68	45.25	55.37	62.63
5	54.99	59.63	48.26	52.13	52.13	45.47	52.39	77.90
6	54.99	59.36	48.26	52.13	52.13	45.25	52.39	59.09
7	54.99	59.36	48.26	52.13	52.13	45.25	52.39	44.99
8	54.99	59.36	48.26	52.13	52.13	45.25	52.39	34.41
9	54.99	59.36	48.26	52.13	52.13	45.25	52.39	26.47
10	54.99	59.36	48.26	52.13	52.13	45.25	52.39	21.25
11	54.99	59.36	48.26	52.13	52.13	45.25	52.39	25.90
12	54.99	59.36	48.26	52.13	52.13	45.25	52.39	31.70
13	54.99	59.36	48.26	52.13	52.13	45.25	52.39	38.96
14	54.99	59.36	48.26	52.13	52.13	45.25	52.39	48.04
15	54.99	59.36	48.26	52.13	52.13	45.25	52.39	59.38

By the end of the planning horizon each alternative would have improved stocking levels and stand age distribution. Timber sales would be designed and laid out on suitable timber land which had timber management as its objective. Timber sales would also be designed and laid out on suitable timber land which had wildlife habitat improvement, range improvement and water yield improvement as their objectives.

Table IV-13 shows the average annual number of acres treated by silvicultural method for each decade. The acres treated are through commercial harvest only.

TABLE IV-13
HARVEST METHOD
(Average Annual Acres Treated)

Alternative	Decade	Intermediate Cut	Removal Cut	Combined Removal Intermediate Cut	Aspen CC	Shelterwood Regen. Cut	Conifer CC	TOTAL
Current Budget	1	0	6279	980	1153	0	698	9110
	2	0	5899	1556	1715	0	263	9433
	3	0	2849	3801	0	0	304	6950
	4	412	315	1251	708	1841	652	5179
	5	408	2293	264	0	1494	883	5342
Market	1	0	6390	602	1757	172	887	9809
	2	0	6203	1801	1443	0	163	9610
	3	0	3570	3621	370	0	244	7805
	4	0	249	1092	0	4278	639	6258
	5	182	3631	0	0	1103	730	5646
Non-Market	1	0	5837	439	700	0	500	7476
	2	0	3481	645	1451	0	224	5801
	3	0	1159	2171	700	0	448	4478
	4	0	2190	627	700	1143	366	4326
	5	0	1061	0	0	2530	381	3472
Constrained Budget	1	0	5847	447	1480	0	231	7995
	2	0	4064	957	1270	0	537	6820
	3	0	974	4103	0	0	0	5077
	4	369	1862	1609	280	221	652	4993
	5	446	939	593	555	1211	597	4341
Current Program	1	0	4433	5000	20	514	558	10525
	2	0	6763	54	1697	0	300	8814
	3	864	1722	1769	1168	0	286	5809
	4	0	1222	628	690	2550	731	5821
	5	334	2731	250	0	860	744	4919
Composite	1	0	4433	5000	20	514	558	10515
	2	0	6763	54	1697	0	300	8814
	3	864	1722	1769	1168	0	286	5809
	4	0	1222	628	690	2550	731	5821
	5	334	2731	250	0	860	744	4919
RPA-80	1	0	6326	3987	960	259	846	12378
	2	0	3205	4043	2616	0	165	10020
	3	2508	1388	3290	0	0	239	7425
	4	0	0	1138	0	4774	949	6861
	5	18	3643	0	0	970	1234	5866
High Productivity	1	0	288	13261	1093	41	645	15268
	2	0	50	7121	2489	228	179	10067
	3	2655	2534	576	0	0	202	5967
	4	1504	0	0	0	3167	1252	5923
	5	507	3236	0	0	878	610	5231

The following table displays estimated timber production for each alternative by product classification.

TABLE IV-14
TIMBER PRODUCTION BY PRODUCT CLASS
AVERAGE ANNUAL VOLUME IN MILLIONS OF BOARD FEET

		Product Class					
Alternative	Decade	Softwood Sawtimber	Softwood Roundwood	Softwood Fuelwood1/	Hardwood Sawtimber	Hardwood Roundwood	Hardwood Fuelwood1/
Current Program	1	22.9	.3	7.7	2.8	.4	3.0
	2	15.7	.4	4.2	9.4	.5	4.2
	3	14.9	.6	4.3	10.3	.5	4.2
	4	17.4	.7	5.7	7.8	.5	2.3
	5	21.3	.8	7.1	3.7	.6	2.3
Composite	1	22.9	.3	7.7	2.8	.4	3.0
	2	15.7	.4	4.2	9.4	.5	4.2
	3	14.9	.6	4.3	10.3	.5	4.2
	4	17.4	.7	5.7	7.8	.5	2.3
	5	21.3	.8	7.1	3.7	.6	2.3
Constrained Budget	1	14.1	.3	2.7	7.9	.1	.4
	2	15.3	.3	2.7	7.8	.1	.4
	3	19.0	.3	4.7	5.0	.1	.8
	4	21.2	.3	4.5	2.9	.1	.8
	5	16.1	.4	4.5	6.2	.1	.7
Current Budget	1	19.7	.3	7.0	6.5	.5	1.0
	2	17.4	.4	4.9	10.6	.1	.8
	3	23.8	.3	4.9	4.6	.5	.8
	4	20.9	.3	4.9	7.2	.5	.8
	5	23.2	.3	4.9	7.2	.5	.8
Market	1	18.8	.3	6.9	9.1	.5	3.0
	2	19.8	.5	4.1	9.9	.5	3.0
	3	24.5	.6	5.2	6.0	.5	3.0
	4	25.5	.7	7.0	4.1	.5	.9
	5	23.4	.8	8.6	5.4	.5	1.0
Non-Market	1	15.5	.3	5.2	3.5	2.2	2.3
	2	11.4	.4	4.7	8.7	3.5	3.7
	3	13.7	.6	4.7	6.7	3.5	3.7
	4	14.5	.7	4.7	6.2	3.5	3.7
	5	15.5	.8	4.7	3.9	3.5	3.7
RPA-80	1	25.3	.3	8.0	6.7	.5	3.0
	2	18.5	.3	4.9	15.5	.5	4.2
	3	24.2	.6	4.8	6.8	.5	4.2
	4	25.9	.6	6.5	2.1	.5	2.3
	5	23.5	.7	8.0	2.5	.5	2.6
High Productivity	1	31.3	.5	3.0	1.7	.2	4.0
	2	11.1	.7	2.1	13.2	.4	4.2
	3	20.9	.7	1.9	4.8	.4	4.2
	4	28.4	.7	1.0	2.6	.4	1.3
	5	34.2	.7	2.3	4.0	.5	2.6

1/ Includes all classes of fuelwood (personal use and commercial)

The President's revised statement of policy (Chief's Letter of 3/30/81) sets certain goals for various resources. The timber goals call for maintenance or enhancement of productivity to (1) minimize inflationary impacts of wood product prices, and (2) commercial lands will have to be brought to and maintained, where possible, at 90 percent of their potential level of growth consistent with the provisions of NFMA.

The R-4 Regional Guide states that for the proposed alternative in each Forest Plan, calculation of the rate of growth (cubic feet/acre/year) will be made for the year 2030. If the growth is less than 90 percent of the LTSYC of the proposed, then a description of the actions and costs required to achieve this growth is needed.

In the Dixie National Forest's array of alternative, growth at 2030 ranges from a low of about 30 percent of LTSYC to a high or 48 percent. The preferred alternative has a growth rate at 30 percent of LTSYC at 2030.

TABLE IV-15
GROWTH RATES TO YEAR 2030
(Net Merchantable Cubic Feet Per Acre Per Year)

	Alternative							
	Current Budget	Composite	Market	Non Market	Current Program	Const. Budget	RPA-80	High Prod.
Growth rate at long-term sustained yield.	34	40	34	46	40	31	36	29
Total combined growth rate in 2030.	13	12	13	15	12	15	12	12
Percent of long-term sustained yield.	38	30	38	33	30	48	33	41
Percent of acres regenerated.	31	34	38	33	34	25	42	35

A significant portion of the mixed conifer and spruce sawtimber on the Dixie National Forest is mature and/or diseased, and is putting on little, if any, net volume growth. Much of the ponderosa pine sawtimber is immature and in dense stands netting less than desirable volume increment. Small sawtimber offered in local markets is a negative factor in presenting viable timber sales. Regenerated stands are slow in establishing and typically take 60 to 80 years for viable commercial size to occur. Peak volume growth rates, especially in stands not intensively managed, are not achieved until age 90 or older. For reasons discussed by Verschoor 1/ (1982), the 90 percent growth constraint is neither feasible nor appropriate for the Dixie National Forest.

Table IV-17 displays fuelwood availability for the first decade. The annual supply of fuelwood would vary according to levels of timber harvest and precommercial thinning. Recent projections of fuelwood demand based on the personal free use program where the typical permit was for ten cords estimated 26,000 cords per year. Under the personal use charge program begun in 1983, the typical permit is for 3 1/3 cords, reducing demand to 8,700 cords per year, which is more realistic in terms of actual removal.

1/ Verschoor, Rudy J. 1982. Evaluating the 90 percent of LRSY Growth Constraint in Forest Planning. Bridger-Teton National Forest. Unpublished Paper.

TABLE IV-16
ESTIMATED FUELWOOD SUPPLY
(Average Annual Cords)

Alternative	Cords
Current Program	21,400
Composite	21,400
Constrained Budget	15,200
Current Budget	20,200
Market	19,800
Non-Market	12,200
RPA-80	22,000
High Productivity	14,000

Reforestation is necessary as a result of timber harvest in all alternatives. In order to better insure regeneration of harvested conifer stands, some work would be done at the time of the regeneration cut. The necessary work would be seed bed preparation to encourage natural regeneration. If natural regeneration is not expected to occur or does not occur, the area would be planted. No work is planned in aspen following harvest as natural regeneration from sprouting readily occurs in this timber type.

The amount of reforestation activity varies with each alternative, and is determined by the amount of suitable acres and the silvicultural treatment of these acres. Alternatives which would make regeneration cuts in the conifer types would have relatively high reforestation activity and alternatives which would make intermediate cuts in the conifer types would have low reforestation activity. Table IV-18 displays the reforestation acres by alternative.

TABLE IV-17
REFORESTATION
(Average Annual Acres Treated)

	Decade				
Alternative	1990	2000	2010	2020	2030
Current Program	1588	402	454	3353	1646
Current Budget	830	476	720	2641	2400
Constrained Budget	315	675	378	1092	1869
Non-Market	586	345	681	1627	2914
Market	1169	413	681	5051	1837
Composite	1588	402	454	3353	1646
RPA-80	1368	344	589	5855	2210
High Productivity	1545	809	517	4419	1492

Timber stand improvement (TSI) activities help increase growth rate, improve timber quality, maintain desirable species composition, prevent insect and disease attacks, and maintain vigorous timber stands. Table IV-19 displays the TSI schedule by alternative.

TABLE IV-18
TIMBER STAND IMPROVEMENT
(Average Annual Acres Treated)

Alternative	Decade				
	1990	2000	2010	2020	2030
Current Program	5000	54	1769	628	250
Current Budget	980	1556	3801	1251	264
Constrained Budget	447	957	4103	1609	593
Non-Market	37	645	2171	627	226
Market	365	1801	3621	1092	300
Composite	5000	54	1769	628	250
RPA-80	3585	4034	3290	1138	900
High Productivity	13261	7120	576	0	0

Levels of sawlog volumes offered by the alternatives would have effects on local timber purchasers and the level of sawmill operation. The current estimated sawmill capacity discussed in Chapter III of 55 MMBF per year is based on double shifts at the two large sawmills and collective historical purchased volume of the small sawmills.

None of the alternatives would supply the sawmills with enough timber volume to operate at maximum headrig capacity in any decade unless all the volume went to only one sawmill. This would not be feasible because of long haul distances (150 miles) across the Forest.

A more realistic comparison would be to describe the effects of Dixie National Forest sawlog outputs on a "bottom line" level of sawmill operation which would be one shift. Panguitch mill capacity would become 13 million board feet per year [1] and Escalante mill capacity 10 million. Small mills combined would have a capacity of 2.5 million, totaling 25.5 million board feet per year for the Forest. Also, assuming that mills would be forced to close at less than bottom line levels of offered timber, the following effects would be estimated:

Alternative	Effects
Current Budget	Both major mills would operate at near bottom line levels. Significant aspen volumes are included, so mills may need to change their configuration and marketing objectives. Most small operations would stay in business, but some at reduced levels.
Market	Both major mills could operate at near bottom line levels, assuming they could accommodate significantly increased aspen volumes, if not, only one mill could remain open. Most small operators would survive, some at reduced levels.

Current Budget

Decade	Average Annual Output, MMBF
1	26.2
2	28.0
3	28.4
4	28.1
5	27.4

Market

Decade	Average Annual Output, MMBF
1	27.9
2	29.7
3	30.5
4	29.6
5	28.8

[1] 10 MMBF from Dixie NF, 3 MMBF log transfer from Fredonia, AZ mill.

Alternative **Effects**

Non-Market

Decade	Average Annual Output, MMBF
1	18.8
2	20.1
3	20.4
4	20.7
5	19.4

It is doubtful that either major mill could remain open under this alternative in any decade assuming present configurations and equal distribution of timber across the Forest.

Implementation of this alternative would probably result in several more small mills replacing two large mills.

Composite and Current Program

Decade	Average Annual Output, MMBF
1	25.7
2	25.1
3	25.2
4	25.2
5	25.0

Both large mills would operate at or near bottom line levels. Significant aspen volumes are included, so mills may need to change their configuration and marketing objectives to remain open. Most small operations would stay in business, but some at reduced levels.

Constrained Budget

Decade	Average Annual Output, MMBF
1	22.0
2	23.1
3	24.0
4	24.1
5	22.3

Both major mills would have to accommodate lower overall and increased aspen volumes in all decades to remain open.

Some small operators may shut down if both major mills could survive. Assuming current mill configurations, required conifer volumes and timber distribution, only one major mill would remain open in any decade.

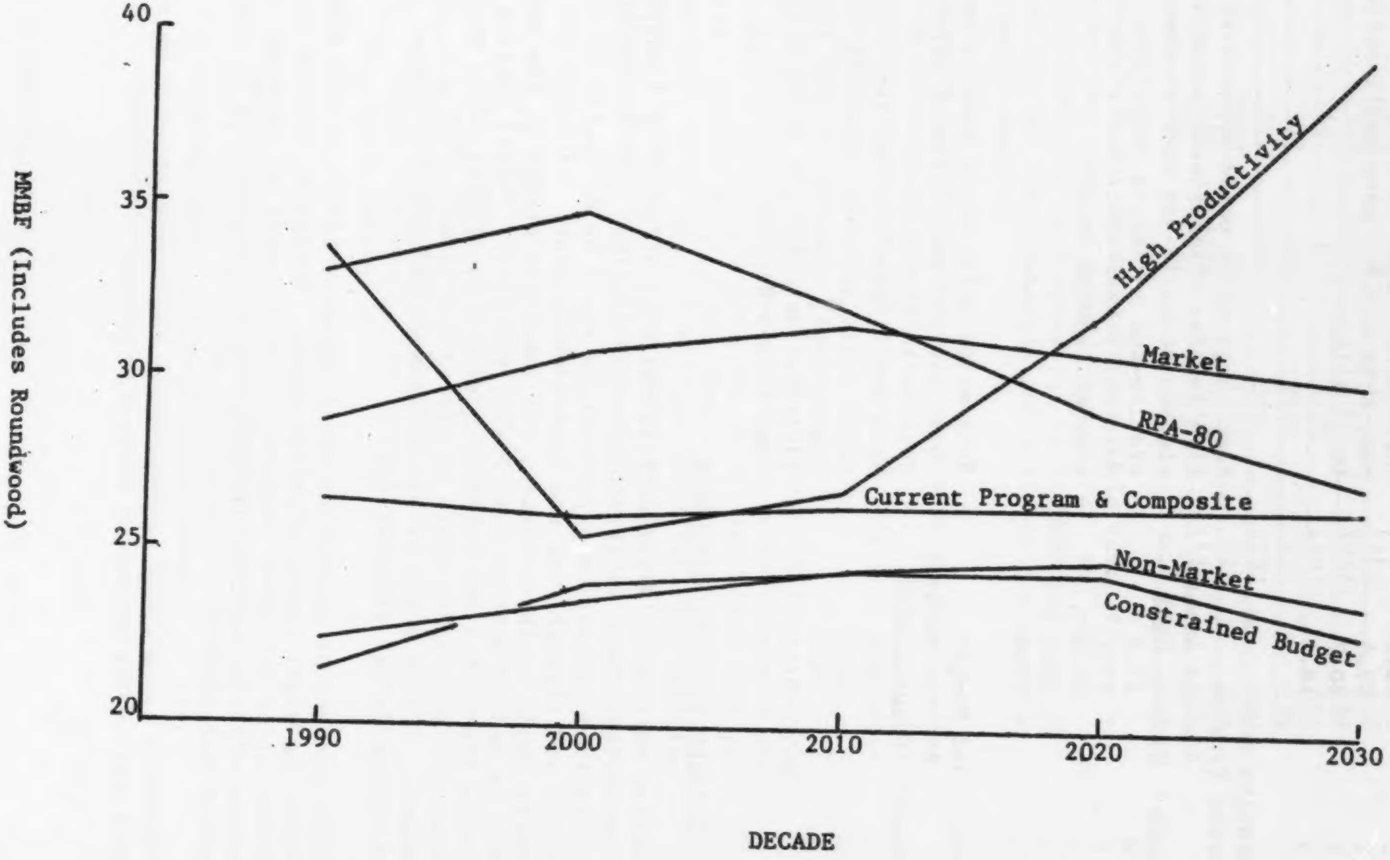
b. Effects on Other Resources

Existing recreation opportunities would be affected by timber management in all alternatives. Road construction would displace some Forest users. The impacts to dispersed recreation opportunities would be mitigated by maintaining visual quality and through road and travel management. Although the timber management impacts would be short-termed, the immediate change to the existing landscape would be undesirable to many Forest visitors. Visual quality objectives would provide the method for conducting timber management while protecting the visual resource. Treatments would be spaced and timed to minimize adverse visual impacts. Trails would be protected from incompatible timber management activities in all alternatives.

Timber management activities would impact wildlife in all alternatives. Timber harvesting might impact riparian areas. Potential effects include increased sedimentation and water temperature as a result of removing riparian cover. Adverse effects would be mitigated in all alternatives by shelterwood or other harvest methods.

Transitory range could be created by timber management. This effect is described in the preceding range discussion.

FIGURE IV-2
COMPARISON OF AVERAGE ANNUAL TIMBER VOLUME OFFERED BY ALTERNATIVE AND DECADE



Timber activities would impact the soil in all alternatives. Harvesting and site specific activities including yarding, dozer piling, burning, and scarification would affect the soil. In addition, road construction would provide the most significant source of soil loss. The effects of road construction on soil and other resources and associated mitigating requirements are discussed in the facilities section of this chapter.

Under all alternatives, dust raised by logging trucks would degrade air quality temporarily and locally and wildlife could be disturbed temporarily by logging traffic. Dust abatement requirements would be used to minimize impacts on air quality along timber haul roads.

Timber harvest volume and timber management opportunities would be foregone on some slopes over 40 percent under most alternatives. Market Emphasis, Current Program, Constrained Budget, Composite, RPA80 and High Productivity Alternatives allow for some cable harvesting.

Some timber volume would be lost to insects and diseases under all Alternatives. Losses would be considerably less in the Market Emphasis and RPA 80 Alternatives.

Fire is used as a management tool to reduce "activity-created" fuel, such as right-of-way and timber harvest slash. The alternatives with the largest timber harvest would require the most activity fuel treatment. The treatment of slash created by timber harvest is necessary to reduce insect and disease problems and to reduce the possibility of uncontrolled wildfire. As more roads are developed and areas accessed, the potential for man-made fires would increase, especially with concentrated use such as firewood gathering in areas where activity fuels have not been burned. Treatment of activity fuels over time and increased access would reduce the potential for uncontrolled wildfires.

The creation of activity fuels and their treatment by fire would increase smoke and particulate matter released into the atmosphere. Alternatives which harvest the most acres would generate the most smoke and particulate matter. Smoke would be mitigated by use of clearing index guidelines associated with burning prescriptions.

Other impacts associated with timber harvest could create subsoil exposure, organic matter loss, leaching, microsite effects and compaction. Those acres that have dry, shallow, and infertile soils, along with those soils that have become compacted may prove difficult to regenerate, thereby impacting vegetative productivity to some degree. Intensive site preparation, which displaces litter and surface soil, or includes hot burns, could result in decreased soil productivity for a number of years and could increase rotation length. This relationship is not well documented. The Market Emphasis Alternative would have the greatest potential for impacting soil productivity and the Constrained Budget Alternative would have the least potential impact. Forest-wide standards and guidelines provide for maintaining or improving long-term soil productivity in all alternatives.

A significant proportion of the vegetative treatment on the Forest is accomplished through the timber program. Past experience has demonstrated that an integrated timber sale program is an effective method of managing the Forest to meet multiple resource objectives. Since no universally accepted method for cost allocation exists, different perceptions of the below cost sales issue will prevail. Some reviewers will view timber program financial data as indicating that the program is not highly profitable and should, perhaps, be reduced. Other reviewers will view the same data as indicating that the profitability of the program is reduced as other resources are taken into consideration. These reviewers would likely recommend that program profitability be enhanced by de-emphasizing these other resource considerations. Fire is also used to accomplish other resource objectives, such as improving wildlife habitat increasing range forage, and preparing a seed bed for new crops of trees. Fire is generally prescribed when it is demonstrated to be the most effective method for reaching resource objectives.

Frequently a commercial timber sale is the most effective manner of achieving these other resource benefits. Vegetative management is a primary purpose of these sales. Some timber sales, for example, are designed primarily to improve the quality of the residual timber in an area, an investment in long-term future timber growth. Salvage sales prevent the waste of timber killed by fire and insects or disease damaged trees. Such sales are intended to reduce fire hazards, facilitate reforestation and other long-term benefits while providing immediate monetary returns which are sometimes below costs. Timber stand improvements such as thinnings, release, and weeding help the growth and quality of the remaining stands but usually do not realize a short-term positive cash flow. In these situations timber sales lose money, or are "below cost". Yet, these sales may be very important to the future productivity of National Forest timber.

Other timber sales are designed more for protection of non-timber resources, rather then maximize returns from timber production. For example, sale layout and design costs are increased if harvest units are made smaller and more dispersed in order to protect wildlife and visual resources. In addition, timber program profitability may be reduced due to longer rotations, controlled access, and differing silvicultural practices. Because of concern for multiple use, additional cost will be incurred by a timber sale in order to derive some larger overall Net Public Benefit. For example, the costs associated with providing a firewood program are included in the commercial timber sale costs. Also, roads constructed in conjunction with timber sales provide access for firewood cutting and general recreational use.

Still another important consideration is the role of National Forest timber in homebuilding, jobs, and the economy in general. Sustained Yield management of National Forest timber helps give stability to communities, especially those whose industrial base depends upon timber. In the east portion of the Dixie's ZOI this steady flow of timber exerts a stabilizing influence in dependent communities which include Panguitch, Tropic, Henrieville, Cannonville, Escalante, and Bicknell.

Timber from the National Forests is vital to meeting the homebuilding industry's needs for lumber. On an average, 25 percent of softwood sawtimber used in homebuilding is supplied from the National Forests. Typically, timber increases in "value added" several times between the stump and delivery of the finished product to the final consumer. That is, even "below cost" timber sales generate additional economic activity. These additional benefits must be taken into consideration in managing the National Forest timber sale program.

c. Unavoidable Adverse Effects

Soil disturbance as a part of road construction for access to timber harvest areas temporarily increases sedimentation in streams. The amount of soil disturbance varies depending upon the miles of road constructed or reconstructed.

Timber volume would be foregone on at least some steep slopes (over 40 percent) in all Alternatives. The Constrained Budget Alternative would harvest no timber harvest on slopes over 40 percent. The Market Emphasis, Composite, Current Program, High Productivity and RPA 80 alternatives would allow varying amounts of cable logging on steep slopes.

Some volume would be lost to insects and diseases in all alternatives but these losses would be considerably less in the Market Emphasis alternative.

Under all alternatives, dust raised by logging trucks would degrade air quality temporarily and locally wildlife could be disturbed temporarily by logging traffic.

Slash burning for hazard reduction and site preparation would cause temporary and local reduction of air quality.

d. Short-term Uses vs. Long-Term Productivity

Timber harvesting practices would maintain the long-term productivity of the land under all alternatives. Productivity of the timber resource would be highest under the Market Emphasis Alternative and lowest under the Constrained Budget Alternative. Timber harvesting would not affect State water quality standards. Site productivity (soil loss), wildlife habitat, visual qualities, or any other resource value would not be reduced to unacceptable levels in any alternative.

e. Irreversible and Irretrievable Commitment of Resources

Building roads into areas included in the timber harvest base (available and suitable acres) would be an irreversible commitment of a resource because of the long time required for roaded areas to revert to an undisturbed appearance. All alternatives would call for road building to access previously unharvested timber, and would, therefore, irreversibly commit those unroaded areas to becoming roaded.

The decision to manage areas without harvesting productive timber (in all alternatives) would result in an irretrievable loss of timber production. These areas include varying amounts of suitable acres on slopes over 40 percent in all alternatives.

6. Water

a. Probable Effects of Implementing Alternatives (Direct Effect)

Water Quantity. The current average water yield from watersheds on the Dixie National Forest is 481,000 acre feet. This is the lowest water yield of any Forest in the Intermountain Region. The potential to significantly increase

long-term water yield across the Forest is very limited. A maximum increase of less than 2 percent is postulated through the use of vegetation manipulation - primarily timber harvest. Since the harvested lands will be regenerated to provide for future fiber production, the induced water yield increase associated with any particular project will eventually decline toward pre-project levels. The postulated maximum possible increase declines to less than a 1 percent increase when figured over the rotation age of the timber stands. The water yield figures in Table IV-19 represent the projected actual water yield increases over natural levels for each given year. These figures include increases already induced by previous timber harvest activities. This existing increase over natural levels amounts to 2,900 ac-ft. The average increase over the current water yield for the 50 year planning period varies from 2,400 acre-feet for the Non-Market Alternative to 4,400 acre-feet in the RPA-80 alternative. These figures represent a 0.5 percent and 0.9 percent increase, respectively, over existing levels. Of the projected increases in water yield, approximately 26 to 33 percent would occur in the Colorado River Basin depending on the alternative (Table IV-20). The remainder would occur in the Great Basin. (For a more detailed discussion of projected water yield figures, see Appendix B.)

TABLE IV-19
WATER YIELD OVER NATURAL LEVELS
(M Acre Feet) - Forest-Wide

Alternative	Decade				
	1990	2000	2010	2020	2030
Current Program	4.3	8.3	8.1	6.7	6.0
Current Budget	4.8	7.6	6.9	7.0	7.0
Constrained Budget	4.6	6.0	5.2	5.2	6.4
Market	5.5	7.7	7.3	7.3	8.0
Non-Market	3.9	5.7	5.6	5.7	5.4
RPA-80	5.1	9.7	8.0	6.3	7.5
High Productivity	4.4	9.06	7.3	6.0	7.4
Composite	4.3	8.3	8.1	6.7	6.0

TABLE IV-20
WATER YIELD OVER NATURAL LEVELS
(M Acre Feet) - Colorado River Basin

Alternative	Decade				
	1990	2000	2010	2020	2030
Current Program	1.2	2.7	2.6	2.1	1.9
Current Budget	1.1	2.0	2.0	2.2	2.5
Constrained Budget	1.2	1.6	1.3	1.6	2.2
Market	1.4	2.0	2.1	2.4	2.9
Non-Market	0.9	1.4	1.4	1.6	1.9
RPA-80	1.3	3.3	2.7	1.9	2.6
High Productivity	1.1	2.7	2.1	1.8	2.7
Composite	1.2	2.7	2.6	2.1	1.9

Although increases in water yield are generally viewed as a positive result, there are areas on the Dixie NF where the benefits of increased water yield are outweighed by its negative impacts. Prime examples are the East Fork of the Sevier River drainages. The East Fork and several of its tributaries have very unstable streambanks. A significant increase in water yield in these drainages could further destabilize the channels resulting in increased erosion. Minimum management restrictions and standards and guidelines designed to prevent significant water yield increases in the East Fork of the Sevier drainages were incorporated in each of the alternatives.

Water Quality. No violations of State water quality standards are foreseen for any of the alternatives. No point sources of pollution to surface waters are anticipated in any alternative. Non-point sources of sediment will be controlled to the extent feasible through implementation of best management practices identified in the Forest Plan and in individual project plans. All alternatives should comply with regulations of the State of Utah regarding "anti-degradation" stream reaches. However, there would be variations in general water quality over time and between alternatives. All of the alternatives would present some degradation of water quality as a result of increased sedimentation by the 2nd decade. This would be due to the need to harvest timber stands on steeper slopes, on more erosive soils, and on more difficult to access areas. Although measures would be taken to minimize erosion, an overall increase in sedimentation would occur, even in those alternatives with high budget levels. In the Non-Market Alternative the increase should be more than offset by reductions in erosion on rangelands, improvement in riparian area condition, and improved streambank stability. This would be accomplished by reductions in livestock numbers and more intensive management of livestock in riparian areas. The Constrained Budget and Current Budget Alternatives would result in increased sediment production from rangelands and riparian areas despite declines in livestock numbers. Reduced service levels of livestock management would be responsible for the declining conditions. The high range level alternatives, especially the High Productivity Alternative, could show significant increases in sedimentation from rangelands.

It is assumed that the eutrophication* problems in Panguitch Lake would be addressed by a coordinated multi-agency lake rehabilitation program. We assume that this program would be successful in improving or at least arresting the decline in water quality conditions. However, the Constrained Budget Alternative would not allow the Forest Service to sustain a pivotal role in the rehabilitation effort. Consequently, water quality parameters in the lake would improve at a slower pace than in other alternatives and not reach State standards until after the 50 year planning horizon. This situation is reflected in Table IV-21 which presents the Forest's ability to meet State water quality standards. The two percent of water yield not meeting State standards is that amount in the Panguitch Creek watershed.

TABLE IV-21
WATER YIELD MEETING STATE
WATER QUALITY STANDARDS (Percent)

Alternative	Decade				
	1990	2000	2010	2020	2030
Current Program	98	98	98	100	100
Current Budget	98	98	98	100	100
Constrained Budget	98	98	98	98	98
Market	98	98	98	100	100
Non Market	98	98	98	100	100
RPA-80	98	98	98	100	100
High Productivity	98	98	98	100	100
Composite	98	98	98	100	100

Flood Prone Areas. None of the alternatives would have a significant impact on flood potential on the Forest.

Water Uses and Facilities. Most of the dams and water transmission facilities that would be on the Forest by the end of the planning period are probably already in place. This would not change by alternative. There would be some additional diversions on the Forest under all alternatives. These would generally be small in scale and would allow for instream flow needs to maintain fisheries, riparian ecosystems and stream channel stability. However, under the Market Emphasis Alternative, there would be some loss of riparian ecosystems. This would be due to new water diversions where values associated with off-Forest water development would be favored over riparian and fisheries value. All alternatives would allow for correction of the existing erosion problems associated with water transmission facilities.

Consumptive water uses for management purposes would increase slightly in all alternatives. This increase would be greatest in the Market Emphasis Alternative, due to increases in the number of developed recreation sites and in the number of permitted livestock.

Riparian Area Condition. Riparian area acreage should remain nearly static in all but the Market Emphasis Alternative. There would be some loss of riparian ecosystem in this alternative, due to new permitted diversions which would dry up some stream reaches. The condition of riparian ecosystems should remain static or improve in all of the alternatives except Constrained Budget, Current Budget, 1980 RPA, and High Productivity. In these alternatives, reduced livestock management levels or more intensive use of riparian areas by livestock would cause some noticeable declines in riparian ecosystem condition.

Effects on Other Resources (Indirect Effects). The watershed program would have a beneficial impact on other resources in all alternatives. (See Soils Section of this Chapter.)

c. Adverse Environmental Effects That Cannot be Avoided

There are no unavoidable adverse environment effects of the watershed program in any alternative.

d. Short-Term Uses versus Long-Term Productivity

(See Soils Section of this Chapter.)

e. Irretrievable and Irreversible Commitment of Resources

(See Soils Section of this Chapter.)

7. Minerals

a. Direct and Indirect Environmental Effects

Demand for access to National Forest System lands for the purposes of mineral exploration and development is expected to increase over the long term. Most National Forest System lands are available for mineral activities, and requests for access must be processed in an efficient, timely, and cooperative manner. Proposals involving mineral activities are processed as prescribed by applicable laws, regulations, policies and interagency agreements. (See Minerals in the AMS of the Forest Plan for more details.)

Management requirements for minerals are based on statutory and regulatory direction for locatable, leasable, and saleable minerals. Also considered are statutory and other management criteria for surface protection appropriate to the lands involved to prevent or control adverse environmental impacts. The mineral-related management requirements are presented in three categories to cover environmental impacts typically associated with exploration and development operations for the various mineral commodities.

The first category is Mining Law Compliance and Administration for locatable minerals. Access to lands open to operations under the General Mining Laws is a statutory right granted by Congress. The Forest Service reviews proposed plans of operations to ensure that operations will meet Federal environmental protection standards. These standards include those for air and water as prescribed by Federal and State laws and regulations. In addition, the plan of operation must provide for prompt reclamation and restoration of disturbed lands, to the degree practicable, for the planned uses of the area. Mineral activity on mining claims is not expected to vary significantly between alternatives.

The remaining two categories are leasable minerals and saleable minerals. For these two categories, reasonable access to Forest lands is also guaranteed once the discretionary decision is made to issue a lease, permit, or license allowing surface use and occupancy. Permits are issued by the Forest Service for initial geophysical prospecting (seismic operations for oil and gas, shallow drilling for geothermal temperature gradient measurement, and geologic investigations for solid minerals). Permits are for the land uses only and grant no rights to the permittees to the minerals involved. The Forest Service has total discretion for disposal of common (saleable) varieties of mineral materials. The BLM issues all other leases, licenses, or permits for exploratory drilling and production of valuable leasable minerals.

BLM proposals to issue a license, permit, or lease for leasable minerals in National Forest System lands are forwarded to the Forest Service asking whether or not the lands are available for mineral exploration and development. If the lands are determined by the Forest Service to be available, standard and special stipulations necessary for the management of the surface resources are identified. Management direction for leasable minerals as to availability ("lease" or "no lease"), and surface resource management requirements are identified through the NEPA process by the National Forest.

Recommendations as to availability of lands for mineral leasing are based on whether development activities of the leasable mineral could be implemented on National Forest System land and still meet the management requirements for minerals in the Forest Plan. Those mineral management requirements reflect surface resource protection and restoration needs.

Secondary mineral processing, other than concentration (milling), and energy conversion facilities will be prohibited in wilderness. Special areas, such as research natural areas and cultural resource areas, can only be recommended for leasing without surface occupancy since disturbance of the surface resources would damage the special characteristics of the land for which they were classified.

One of the main directives in the Forest Service Regional Guide for the Intermountain Region (dated January 1984), concerning minerals, is that a maximum land base be provided for minerals/energy prospecting, leasing, and development through conservative use of withdrawal authority, use of overly restrictive surface use stipulations, and constraining management direction.

A formal review of existing withdrawals will be conducted by the Forest between 1985 and 1988. The result may be more National Forest land made available for entry under the mining laws.

Minerals activity and oil and gas production would remain about constant through the planning period under all alternatives. Coal production would begin on a modest scale about the second decade and gradually increase until the end of the planning period. Regional direction for licenses, leases, permits, etc., would be met under all alternatives. There would be significant problems for management and industry under the Constrained Alternative. More disturbed area would occur under the RPA 80 and High Productivity Alternatives, in that order.

b. Effects on Other Resources

Oil, gas, coal, and geothermal resource exploration and development involve the construction and use of roads, pipelines, drill pads, and the ancillary facilities necessary for development, production, and transportation. The major on-site physical and biological impacts of these activities are soil erosion, water pollution, and air pollution.

Other mineral and mineral materials exploration, development, and production would also have impacts associated with the construction and use of roads, powerlines, and other necessary ancillary facilities, overburden and waste removal and placement for surface or underground mining, and concentrating mills. The major potential on-site physical and biological environmental impacts of these activities would be soil erosion and air and water pollution.

Should operations be approved in wilderness, there would be impacts upon the wilderness characteristics of solitude and on the pristine character of the land. The impact on solitude would be limited to the duration of the mineral exploration and development activities. The duration of the impact upon the pristine character of the lands would last until natural vegetation and appearance are restored. There are existing oil and gas leases in all three newly established wildernesses. Exploration and development of the leased areas on the Escalante Anticline, in and around the Box-Death Hollow Wilderness, appears imminent at this writing. The effect would be the same under all alternatives, except a constrained budget could seriously hamper minerals management of this sensitive area.

Some adverse impacts can be expected from minerals exploration, regardless of the alternative implemented but the RPA 80 and High Productivity Alternatives would generate the most disturbed acreage. These impacts may include road or trail construction for access to valid claims, vegetation disturbance during exploration or development, degraded air quality, reduced water quality, and wildlife disturbance. Environmental assessments for specific projects would consider the protection of surface resources and would be tiered to the proposed Plan and Final EIS.

Positive impacts include the fact that local roads are currently being constructed primarily in conjunction with timber and mineral resource activities. These local roads access areas that are compatible with multiple resource and management uses. Roads are also discussed in the Facilities section of this chapter.

A federal mineral leasing charge is assessed on oil and gas leases. Fifty percent of this money is paid to the State and redistributed to county and local governments. Minerals exploration and development provides primary and secondary employment to the local and regional economy.

Operating plans would include provisions to minimize adverse environmental impacts on surface resources in all alternatives. The requirements for air quality, water quality, solid waste disposal, scenic values, fisheries and wildlife habitat, roads, and reclamation would also be incorporated. Reasonable conditions for protection would be imposed.

c. Irreversible and Irretrievable Commitments of Resources

Implementation of the RPA 80, Market and High Productivity Alternatives would result in the most irreversible and irretrievable commitments of resources because of increased activity. The Composite Alternative commits less than those listed above, and the Current, Constrained, Current Budget and Non-Market Alternatives commit the least.

Extraction of mineral or energy resources is itself an irreversible and irretrievable commitment. Removal of mineral resources is permanent. Once removed, minerals cannot be replaced.

Major soil loss due to erosion or mass soil movement is an irreversible degradation of productivity. Soils with high erosion potential and steep slopes should be avoided.

Should a wildlife or fish population be lost due to cumulative impacts, the action may be irreversible. If suitable habitat can be restored, the loss may be mitigated by transplanting from other populations.

Capital improvements to communities to accommodate increased populations are irretrievable commitments.

Major mineral activity in wilderness could cause the irreversible loss of the wilderness resource.

Loss of a cultural resource site due to mineral activity is irreversible.

Mineral impacts to vegetation, visual conditions, and recreation opportunities are not expected to be irreversible or irretrievable.

d. Unavoidable Adverse Effects

Most mineral or energy developments require an access road and are likely to involve some site excavation. Road construction and the potential for some unwanted travel may cause impacts that cannot be avoided. The impacts of road construction and development excavation cannot be avoided, but most of them can be adequately mitigated. The types of impacts are much the same for all alternatives, but their severity is determined by the amount of activity. The noise, visual impact, and dust of mineral activity cannot be avoided but is usually temporary. Soil would be disturbed. If disturbances are on highly sensitive soils, they may erode and be lost from the site. Most mineral activity requires the clearing of vegetation and removal of soil, loss of livestock forage, and wildlife habitat. Impacts to water that cannot be avoided include minor increases in runoff from cleared areas and increased sediment. These cannot be totally mitigated. The likelihood of oil or other pollutants spilling may be reduced by a well-devised spill plan. Most adverse impacts on wildlife and fish habitat can be mitigated or accommodated by the animals' adaptability, but vegetation clearing, sedimentation, and disturbance create some adverse impacts. Usually this impact can be avoided on key wildlife habitats such as elk calving areas.

Mineral activity would change recreation opportunities and may cause unavoidable impacts to cultural resources. Mineral activity in wilderness unavoidably impacts that resource temporarily and permanently.

Social effects on local communities follow increased mineral and energy development.

e. Short-Term Uses versus Long-Term Productivity

Impacts of mineral and energy development are usually short-term because adequate technology and planning safeguards exist to return disturbed sites to their former productivity. The mineral extraction process is a short-term activity, however, once removed, minerals cannot be replaced.

Land Ownership and Leasing. Leases are issued for 10 years or a short-term, but mineral claims are long-term commitments and can result in a land patent and transfer of land to private ownership.

Vegetation Resource. Most vegetational cover can be rehabilitated in a short time, but sensitive species with small localized populations may be lost permanently. Removal of sensitive types of vegetation would have a long-term adverse effect, especially in high alpine zones.

Soil Resource. If vegetation is removed from a high precipitation area, serious soil erosion may result. Exposure of highly sensitive soils can result in erosion or mass soil movement. This would be a long-term effect because it would take many years to replace the soil.

Hydrology and Water Quality. A minor increase in runoff is expected under any alternative. This runoff may add sediment to the streams, a short-term effect. There is a slight chance of an oil or chemical spill, which could have a long-term effect. Both effects can be held to a minimum if proper procedures are followed.

Cultural Resources. These resources are not expected to be affected unless an unintentional disturbance occurs. If unintentionally disturbed, damage would be a long-term effect.

Wilderness/Primitive Area Impacts. Where development is allowed, wilderness values would be lost until such time as natural conditions could be restored. This would be a long-term or permanent effect.

Wildlife and Fish Habitat. Most impacts on wildlife and fish are short-term. Site rehabilitation can usually restore the long-term productivity of these habitats. If cumulative impacts create loss of wildlife or fish populations, the impact would be long-term.

Recreation. Noise, air pollution, and visual intrusion create short-term impacts that cease to exist following termination of the activity. Impacts on recreation opportunities are generally short-term unless roads remain open which alters the type of recreation opportunities available over the longer-term.

Range. Impacts on livestock operations are short-term and insignificant.

Social. Change brought by mineral development usually creates short-term, but abrupt impacts to establish social regimes. Communities then gradually adjust over a period of time followed by long-term suitability until the end of mineral production which again causes a short-term abrupt social change. This social phenomenon is generally referred to as "boom-bust".

8. Human and Community Development

Human resource programs on the Forest are affected more by the budgetary restrictions of other agencies than the resource management alternative selected. Implementation of any alternative provides an opportunity to contribute to human and community development programs. These include activities that provide youth with resource conservation work and related learning experiences. Examples of these activities include the Youth Conservation Corps (YCC) and the Young Adult Conservation Corps (YACC). Adult employment and training programs, such as the Senior Community Service Employment Program (SCSEP) and the Comprehensive Employment Training Act (CETA), are also provided. These programs help ensure equal employment opportunities for women, minorities, the elderly, and the handicapped.

9. Lands

a. Probable Effects of Alternatives

Management efficiency will improve with land adjustment for all program and activity supporting alternatives. All of these alternatives function effectively with a minimum of conflict and impact (with other resource practices). The exception to this statement involves the Constrained and Current Budget Alternatives which do not offer program support (at an accomplishment level) longer than the first decade of the analysis period.

Rights-of-way activities will benefit various resources at levels directly dependent upon respective alternative funding levels. All alternatives create little or no impact except for the Constrained and Current Budget Alternatives which offer minimal program support beyond the end of the initial decade of the analysis period.

Occupancy trespass, title claims, and Small Tracts Act activities are functional to landline location program activities. These activities are influenced directly by funding. The Constrained and Current Budget Alternatives would not offer adequate funding after the first decade. In all alternatives exhibiting reduced funding, land disturbance and associated impacts would increase in frequency and severity. The nature of these impacts is one of conflict and would, in most likelihood, be difficult to mitigate.

Demand for special use permits, including those for small hydropower projects, is anticipated to remain the same under all alternatives, but administration of existing permits and evaluation of new applications would vary according to funding levels inherent with each alternative. The level of impact is a function of this influence. The quantity and quality of permit processing and adjustments, inspections, and fee adjustments would be impacted the most by constrained funding under the Constrained and Current Budget Alternatives while the High Productivity Alternative offers the least constraint. Support levels to special use administration would determine the intensity of resource impacts.

All alternatives would affect the administration of the interchange program, but not to levels causing significant impacts to Forest resources.

b. Unavoidable Adverse Effects

Land adjustment activities under constrained funding level alternatives do not meet demand. This would create varying levels of adverse impacts to water, soil, wildlife, and recreation resources both on and adjacent to the Forest.

Utility and nonrecreational special use construction and operation would disturb vegetation and soils. Scenic qualities might be altered and other uses of National Forest system lands may be adversely impacted at various levels on a site-specific basis. The greatest potential for these impacts exists under the Constrained and Current Budget Alternatives. Alternatives C and D could result in inadequate administration, thereby causing increased trespass related impacts on water, soil, wildlife, and recreation resources.

c. Short-Term Uses versus Long-Term Productivity

Most land activities have the same short-term and long-term impacts, once any construction phase is completed. This would be true for land adjustment and rights-of-way.

Special uses have mixed effects. Some, such as the "construction of a storage permit" have short-term effects and some, such as a "power line permit" have long-term. The long-term use permit is predominate in the special use program.

d. Irreversible and Irretrievable Commitment of Resources

Land adjustment activities are normally an irretrievable action. The need for the offered land, in most cases, is tied to long-term Forest needs and objectives, seldom would that land, once received, become land available for trade. In contrast, often the selected land once traded is put to uses (expansion of a subdivision area, for example) that are incompatible with National Forest use.

Rights-of-way activities are normally long-term if not irretrievable. Very few temporary road or easements occur in this program. Rights-of-way needs originate from long-term road system objectives or trail and/or trailhead needs.

Occupancy trespass, title claims, and Small Tracts Act activities that are carried to the point of conveyance take on the same characteristics as discussed in the land adjustment statement above.

Special use activities in most cases are long-term, but usually are notirreversible and/or irretrievable. There are, of course, some that come very close to that status (road permits, for example).

There may be some small scale hydropower facilities utilizing streams on the Forest during the planning period in all alternatives.

e. Research Natural Areas

All of the alternatives would designate establishment of three new research natural areas.

Short Term Uses vs. Long Term Productivity. Designation of Research Natural Areas is a long-term commitment, but does not reduce productivity.

Irreversible and Irretrievable Commitment of Resources. Designation of Research Natural Areas is reversible. However, alteration of natural areas by human activities often is not reversible from a scientific perspective. Once natural ecosystems are unnaturally altered, their value as a scientific baseline is diminished.

10. Soil

1. Probable Effects of Implementing Alternatives (Direct Effects)

a. Watershed Condition

Watershed condition is a measure of soil productivity, hydrologic condition and water quality. The condition of the watershed may be rated as maintained, improved, or declining.

Improved watershed condition is the result of watershed improvement projects. Both declining and maintained watershed condition acres may be improved. Watershed improvement projects decrease soil erosion, improve water quality and maintain or improve site productivity.

Declining watershed condition are acres of land that are continuing to decline in watershed condition or soil productivity due to past management activities or natural disaster. At the start of the planning period for all alternatives there are 725 acres of large size projects and 1515 acres of smaller projects that require watershed restoration. In addition there are 110,000 acres of poor condition range, which are not back to their potential yet. Table IV-25 shows by alternative the acres of (1) soil and water resource improvement, (2) maintained watershed condition, and (3) declining watershed condition.

Under the Non Market Emphasis and Composite Alternatives, aggressive action would be taken to treat the backlog watershed restoration acres. The large projects would be completed by 1993 and the smaller projects by 2009. In addition, under the Non-Market Alternative the reduced number of AUM's, fencing of selected riparian areas and better livestock distribution would result in improving the poor condition range to fair or better condition. The overall results of the alternative would be no declining watershed condition acres by the end of the planning period.

Under the 1980 RPA Alternative, aggressive action would be taken to treat the backlog watershed restoration acres. Treatment would be completed on both the large and small scale projects by 2004. However, the increase in grazing numbers would result in the poor condition range remaining in poor condition. There would be significant acreage in declining watershed condition by the end of the planning period.

Under the High Productivity and the Market Emphasis Alternative, moderate action would be taken to treat the watershed restoration backlog. The large projects would be completed by 2001 and the smaller projects by 2021. In addition, 16 acres per year would be treated with K.V. funds in timber related projects. These alternatives would have a significant increase in livestock numbers and timber outputs. Poor condition range would not be improved under these alternatives and additional acres of forest and range land would decline in watershed condition. There would be a significant acreage in declining watershed condition by the end of the planning period.

Under the Constrained Budget Alternative, only the small watershed restoration backlog acres would be treated. The larger project acres would remain untreated and continue to degrade. Also, funds would not be available to improve poor condition range to fair or better condition. The end result would be the highest amount of acres in declining watershed condition by the end of the planning period of all the alternatives.

Watershed restoration on the backlog acres would progress at moderate rates under the Current Program Alternative. The larger projects would be completed by 2001 and the smaller projects by 2021. Most of the poor condition range would be improved to fair or better condition by the end of the planning period.

Under the Current Budget alternative, the larger watershed backlog acres would be treated by 2004, however, the smaller projects would not be completed within the planning period. Livestock numbers and timber harvest would be reduced under this alternative. Approximately one-half of the poor condition range would be improved to fair or better condition by the end of the planning period.

TABLE IV-22
SOIL AND WATER RESOURCE IMPROVEMENT
(Acres)

Alternative	Decade				
	1990	2000	2010	2020	2030
Current Program	51	63	80	63	38
Current Budget	43	46	68	68	47
Constrained Budget	33	33	33	33	33
Market	63	75	92	75	50
Non-Market	85	138	35	20	20
RPA-80	101	162	39	19	19
High Productivity	63	75	92	75	50
Composite	85	138	35	20	20

TABLE IV-22 (Con't)
MAINTAINED WATERSHED CONDITION
(Acres)

Alternative	Decade				
	1990	2000	2010	2020	2030
Current Program	1,780,543	1,803,191	1,825,963	1,848,756	1,870,937
Current Budget	1,775,665	1,786,048	1,796,546	1,807,175	1,817,721
Constrained Budget	1,771,619	1,771,899	1,772,179	1,772,459	1,772,739
Market	1,771,659	1,772,137	1,772,755	1,773,400	1,773,843
Non Market	1,783,835	1,814,872	1,845,805	1,872,130	1,884,423
RPA-80	1,771,862	1,773,016	1,774,034	1,774,350	1,774,730
High Prod.	1,771,610	1,771,988	1,772,506	1,773,053	1,772,898
Composite	1,780,543	1,803,191	1,825,963	1,848,756	1,870,937

TABLE IV-22 (Con't)
DECLINING WATERSHED CONDITION
(Acres)

Alternative	Decade 1990	2000	2010	2020	2030
Current Program	101.651	78.991	56.206	33.421	11.260
Current Budget	107.761	97.366	86.846	76.216	65.691
Constrained Budget	112.811	112.531	112.251	111.971	111.691
Market	112.736	112.246	111.611	110.976	110.551
Non Market	97.539	66.449	35.609	10.223	0
RPA-80	112.496	111.281	110.376	110.041	109.661
High Prod.	112.786	112.396	111.861	111.326	111.501
Composite	101.311	77.901	55.566	33.211	11.250

b. Soil Erosion

On the Dixie National Forest, natural soil erosion rates are very high due to a significant amount of erosive geologic formations such as the Navajo sandstone and Wasatch limestone. The erosive features that characterize Zion National Park, Cedar Breaks National Monument and Bryce Canyon National Park were formed in these formations. It was determined that measuring sediment would have little value as an environmental indicator of Forest land management due to the very high background levels in the streams as they leave the Forest. Instead, on-site soil erosion was chosen as the measure. On-site soil erosion is a measure of site productivity.

For the alternatives evaluated, on-site soil erosion over natural levels was used to measure the difference in site productivity. Table IV-25 shows by alternative the on-site soil erosion over natural levels. Minimum management requirements and standards and guidelines have been developed for all the alternatives to ensure that long-term soil productivity is protected. The minimum management requirements can be found in Appendix B of the EIS. Standards and guidelines are found in the prescriptions in the Forest Plan.

Logging and associated road construction are the major earth disturbing activities on the Dixie National Forest. All alternatives have the greatest amount of on-site soil erosion over natural levels from available, capable and suitable forest lands in the first two decades. On-site soil erosion decreases significantly in the latter three decades. On the average, for the planning period, the Non-Market and Constrained Budget Alternatives have the least amount of erosion while the RPA 80 and High Productivity Alternatives have the greatest amount.

TABLE IV-23
ON-SITE SOIL EROSION (M TONS)
OVER NATURAL LEVELS

Alternative	Decade 1990	2000	2010	2020	2030
Current Program	19.4	20.9	12.2	10.4	8.2
Current Budget	23.3	18.7	12.8	7.9	7.1
Constrained Budget	19.3	15.	8.1	6.7	7.2
Market	25.9	18.2	12.4	8.0	8.4
Non-Market	17.0	12.6	8.0	5.0	4.4
RPA-80	28.7	22.0	11.4	8.7	8.5
High Productivity	31.2	21.3	10.1	8.2	8.0
Composite	19.4	20.9	12.2	10.4	8.2

c. Soil Productivity

Long-term soil productivity is an indicator derived from soil horizon loss/productivity relationship measured as a percentage of Forest and rangeland productivity in relation to sustained full production potential.

Acres not maintaining long-term soil productivity are the sum of (1) acres identified as part of the soil and water resource improvement backlog, (2) acres permanently taken out of productivity such as, roads, facilities, etc., and (3) acres where established soil loss tolerance values are exceeded. Acres in declining watershed condition are assumed to be exceeding soil loss tolerance values.

Based on the emphasis of the various alternatives, there would be differences in amount of watershed restoration acres treated, differences in acres of declining watershed condition, and differences in amount of acres taken out of production of roads, etc.

TABLE IV-24
SOIL PRODUCTIVITY MAINTAINED
(Percent)

Alternative	Decade				
	1990	2000	2010	2020	2030
Current Program	93.8	95.0	96.1	97.2	98.3
Current Budget	93.5	94.0	94.5	95.0	95.5
Constrained Budget	93.3	93.3	93.2	93.2	93.2
Market	93.2	93.2	93.2	93.1	93.0
Non Market	94.1	95.6	97.2	98.5	99.0
RPA-80	93.2	93.2	93.2	93.2	93.1
High Productivity	93.2	93.2	93.2	93.1	93.0
Composite	93.8	95.0	96.1	97.2	98.3

2. Effects on Other Resources (Indirect Effects)

Soil and water restoration is the major project in the soil and water program that would have an effect on other resources. Soil and water restoration projects would have a beneficial effect on other resources such as, timber and range from the standpoint of increasing productivity, maintaining soil stability and decreasing erosion and sedimentation. There would be a beneficial effect on the wildlife and fish resource from the standpoint of improving streambed stability and riparian ecosystem condition. Silt reduction and improved water quality and flow conditions would improve fish spawning habitat.

The amount of beneficial effect would vary by alternative with the amount of soil and water resource improvement that would be accomplished.

Watershed support to other resource elements in the environmental analysis and assessment process would have a beneficial effect from the standpoint of resource protection. Except for the Constrained Budget Alternative, the alternatives provide a sufficient amount of watershed management support to the other resources. This could be used to identify mitigating requirements for resource protection.

3. Adverse Environmental Effects that Cannot be Avoided

There are no adverse environmental effects of the watershed program on other resources. Some alternatives (Constrained Budget and Current Budget) are slower than others in treating the backlog of watershed acres needing treatment. These untreated areas would continue to erode until treated. The resulting erosion, sediment, and loss of soil productivity are adverse environmental effects that cannot be avoided.

4. Short-Term Uses vs. Long-Term Productivity

Soil and water resource improvement projects would improve long-term productivity by reducing on-site soil erosion and sedimentation, improving streambank stability and improving water quality. Treated areas would be returned to producing resource outputs such as, livestock and wildlife forage of wood fiber.

5. Irretrievable and Irreversible Commitment of Resources

Except for large scale watershed rehabilitation structures, there would be no significant irretrievable and irreversible commitment of resources. Only the structure itself such as, rock gabions, etc., would take any lands out of production. Most watershed restoration projects would result in the entire treated area returned to production.

11. Facilities

a. Probable Impacts of Implementing Alternatives

Administrative Sites and Buildings. Current Program, Current Budget and Composite alternatives do not include an adequate program for the repair and maintenance of buildings. Under these alternatives, buildings would be minimally maintained. Due to a lack of preventive maintenance, the condition of facilities would continue to decline, requiring premature replacement.

Non-Market Emphasis, Market Emphasis, Market Emphasis with Timber Departure, 1980 RPA Program, and High Productivity Program alternatives include programs for preventive maintenance and repair that would increase site usefulness and prolong life.

The Constrained Budget alternative program would reduce the number of buildings substantially. The buildings left would be very minimally maintained with no preventive maintenance. Buildings would deteriorate, their function would be lost, and the capital investment would be lost.

Transportation. Under the Current Budget , Current Program and Composite alternatives, the road system would be maintained as it is now. That is, one-fifth of the road system would be maintained each year. Roads would be maintained on a priority basis depending on use. Arterial and collector roads would be minimally maintained to handle traffic volumes. Signing of roads would not be up-to-date. Local roads would be maintained to Level 2. Arterial and collector roads would gradually deteriorate. Local roads would deteriorate, become unsafe, and contribute to resource damage. As local roads become impassable, they would be closed, or new routes could be pioneered by users and use would be limited to four-wheel drive vehicles.

Under the Constrained Budget alternative, only roads absolutely essential for Forest activities would be maintained. These roads would be minimally maintained and would gradually deteriorate. Signing on these roads would be provided only where absolutely essential for the safety of the users. All other roads not used would not be maintained. These roads would deteriorate, become unsafe, and contribute to resource damage.

The Non-Market Emphasis, Market Emphasis, 1980 RPA Program, and High Productivity alternatives would develop and maintain an efficient, safe and environmentally sound arterial and collector road system. Local roads would be maintained at Level 1 if open and Level 2 or 3 depending on uses. Arterial and collector roads would be reconstructed on a continuing basis.

Under the Current Program and Current Budget, bridges would receive minimal maintenance. The six bridges that do not meet Utah State Standards would not be replaced. Under the Constrained Budget alternative, bridges would deteriorate and be removed from service. No bridges would be replaced. Under the Non-Market Emphasis, Market Emphasis, Market Emphasis with Timber Departure, RPA 1980 Program, and High Productivity Program, bridges would be adequately maintained and the six sub-standard bridges could be replaced.

TABLE IV-25
PROJECTED OUTPUTS (Miles) OF ROAD MAINTENANCE AND CONSTRUCTION AND RECONSTRUCTION OF COLLECTOR AND LOCAL ROADS BY ALTERNATIVES AND SELECTED YEARS, 1985-2030

Road Maintenance (Miles)

Alternative	1985	1986	1988	1990	2000	2010	2020	2030
Current Program	2170	2215	2305	2427	2635	2771	2951	3173
Current Budget	2170	2215	2305	2427	2635	2771	2951	3173
Const. Budget	2123	2161	2196	1579	1604	1616	1628	1643
Market	2170	2214	2303	2423	2667	2827	2976	3131
Non-Market	2160	2194	2261	2359	2591	2740	2891	3040
RPA-80	2170	2215	2305	2427	2688	2832	3020	3253
High Prod.	2170	2215	2305	2427	2635	2773	2951	3175
Composite	2170	2215	2305	2444	2689	2857	3069	3327

Collector Road Construction & Reconstruction

Alternative	1985	1986	1988	1990	2000	2010	2020	2030
Current Program	1	4	12	2	1	1	1	1
Current Budget	1	4	12	2	1	1	1	1
Const. Budget	1	3	11	1	0	0	0	0
Market	1	4	12	2	1	1	1	1
Non-Market	1	4	12	2	1	1	1	1
RPA-80	1	4	12	2	1	1	1	1
High Prod.	1	4	12	2	1	1	1	1
Composite	1	4	12	2	1	1	1	1

Local Road Construction & Reconstruction

Alternative	1985	1986	1988	1990	2000	2010	2020	2030
Current Program	45	45	45	28/32	18/34	15/21	11/22	7/22
Current Budget	45	45	45	28/22	18/34	15/21	11/22	7/22
Const. Budget	18	18	18	15/33	18/23	17/15	17/13	10/16
Market	44	44	44	15/38	28/26	20/17	12/20	6/25
Non-Market	34	34	34	11/31	19/19	11/15	7/18	5/18
RPA-80	45	45	45	17/40	27/27	24/17	9/26	5/28
High Prod.	45	45	45	24/46	28/25	15/27	9/30	5/28
Composite	48	48	48	31/55	28/25	134/22	5/26	5/27

Dams and Canals. Dams would be routinely inspected and maintained under the Current Program, Composite, Current Budget, Non-Market Emphasis, Market Emphasis, 1980 RPA Program, and High Productivity alternatives. Under the Constrained Budget alternative, maintenance would be provided only to correct serious safety items. Under this alternative, dams would deteriorate and be taken out of service by breaching. The impact of this action is loss of use and loss of return on capital investment.

All canals on the Dixie National Forest are owned and maintained by special use permittees. Maintenance on the canals would be carried out by the special use permittees, regardless of alternative.

Energy Transportation and Utility Corridors/Windows. The potential corridors/windows as listed in Chapter III, would not change by alternative.

These corridors/windows are identified as follows, with types of utilities suitable to each and width of the corridor/window area shown:

TABLE IV-26
SUITABLE TYPE OF UTILITY

Corridor/Window	Over-Head	Under-Ground	Over the Surface	Width
Corridors				
1)Utah Power & Light Co. 138 kV transmission line from Cedar City west substation to St. George, UT, via Newcastle and Central, UT	X	X		Existing right-of-way width only (50 feet) for portions outside of Newcastle-Veyo Window area.
2)Garkane Power Assn. Inc.'s 69 kV transmission line from Boulder Hydroelectric Plant to Escalante substation	X	X		Existing right-of-way width (100 feet).
3)Garkane Power Assn. 69 kV Transmission Line from Henrie Substation to Escalante Substation.	X	X	X	Part of Johns Valley/Upper Valley/Main Canyon Window of variable width - 0.5 - 15 miles.
4)Intermountain Power Project 500 kV DC transmission line from Newcastle to Veyo, UT	X	X		Within a window of available width (from 1.0 to 3.0 miles).
5)Utah Power & Light Co. 230 kV transmission line in South Johns Valley and Cedar Fork	X	X	X	Within a window of variable width (0.5 to 15.0 miles). (Part of Johns Valley/Upper Valley/Main Canyon Window.)

Corridor/Window	Over-Head	Under-Ground	Over the Surface	Width
Corridors				
6)Utah State Road 18, from line, same as 500 kV DC Transmission.				
7)U.S. Highway 89, Long Valley Junction area	X	X		Existing right-of-way width (132 feet). Three separate segments of NF land.
8)Utah State Road 12, from Utah State Road 63 to Escalante, UT. Same as UP&L 230 kV transmission line				
Windows				
9)Newcastle to Veyo, UT	X	X		Variable 1.0 to 3.0 miles.
10)Interstate 15	X	X	X	Variable 0.1 to 1.5 miles.
11)Three Creeks (Two separate segments on NF lands	X	X	X	0.25 mile.
12)Hillsdale Canyon-Alhstrom Hollow	X	X		Variable 0.25 to 0.5 mile.
13)Johns Valley to Main Canyon via Upper Valley (two segments)	X	X	X	Variable 0.5 to 15.0 miles.
14)Main Canyon to Widtsoe	X	X		Variable 0.5 to 1.0 miles.
15)Escalante, UT to Antimony, UT via Davis Flat Junction	X	X		Variable 0.5 to 6.0 miles.

The principle consequences of energy transportation and utility construction would be adverse effects on soils, water, land stability, and scenery. Another problem associated with this is management of off-road vehicle use on energy transportation and utility rights-of-way.

There would be limited effects to timber, grazing, and mineral resources. Typically, only a few acres would be affected, since rights-of-way would be narrow, resulting in a low acreage per mile of linear facility.

See Appendix D for detailed discussion on types of facilities allowed in corridor/window avoidance areas, and mitigation measures.

b. Unavoidable Adverse Effects

Forest roads can lead to big game disturbance by supporting increased traffic in remote areas. The amount of disturbance varies as to type of road, type of topography, location, and habitat sensitivity.

Road construction and reconstruction would temporarily increase soil movement, but this effect would be reduced as slopes and ditches revegetate and stabilize. Construction and reconstruction of local roads would alter scenic quality. When roads are constructed in semi-primitive, motorized or semi-primitive, nonmotorized the Recreational Opportunity Spectrum (ROS) classification changes to roaded-natural area.

Utility corridor access roads can create disturbances to big game if vehicular useage increases. This impact can be coupled to the attractive browse found in utility corridors. The net impact to big game is yet undetermined. During the construction of the corridors short term would occur, soil movement. The corridors would also decrease the visual quality of an area.

c. Short-Term Use Versus Long-Term Productivity

Roads do not affect long-term productivity of the Forest, because the average road density in timbered areas is only three to four miles per square mile. This means that less than two percent of each square mile is taken out of production.

d. Irreversible and Irretrievable Commitments of Resources

Facilities such as administrative sites (usually buildings) and roads may cause irretrievable resource losses to the immediate area they occupy although they may be removed and restored over time. The success of this reestablishment is a function of technological and budgetary commitment.

12. Protection

a. Fire and Fuels Management

The Level II Fire Analysis will be used as the basis for program levels in all alternatives. The analysis will be maintained annually as necessary to implement the fire management program, and identify changes in forces, activities, and expected outputs.

The purpose of the Level II Analysis is to document the Forest's most efficient fire management program. With minor refinements, the current Level II Analysis is applicable to the Forest's Current Program, Non-market, RPA, Market, and Composite Alternatives.

The number of man-caused fires and acres burned is expected to increase over time due to an increase in the number of Forest users. The resource values lost through wildfire is also expected to increase with an increase in the number and size of fires and the higher values associated with continued resource management and real estate development.

Should Constrained Budget and Current Budget alternatives provide for less than optimum budgeting for initial attack, the result would be larger fires, more resource damage, and more FFF dollars spent in suppression. For example, fire analysis indicates that reducing the 1978 initial attack budget by 20% ($34M) increased the acres burned by 432 acres, cost an additional $23M to suppress, and resulted in $23M additional unrecoverable timber loss should the net effect of a budget reduction result in a reduced fire program, there would be a loss in economic efficiency and adverse environmental impacts. A long term implication of reduced budget dollars might be an increase in the annual number of fires through a reduction of dollars spent on fire prevention. In addition, a constraint on the dollars spent on fire detection would likely increase fire size upon discovery, and the number of fires that reach large fire status.

Selection of a high timber activity alternative, for example, the Forest's High Productivity or market emphasis alternatives, would increase the capital investment on a significant number of the Forest's acres. An appropriate fire protection response would be to include additional initial attack forces on the Forest to protect these investments, or to reposition initial attack forces to be responsive to changing values.

Current policy calls for fire management strategies to be responsive to direction in the Forest Plan. There may be a conflict between funding levels and the plans desire to implement the most cost effective program based on Level II Fire Management Analysis. If this disparity lasts very long, an adjustment in resource outputs may be necessary due to a loss in productivity.

b. Forest and Rangeland Pest Management

Though the short term grazing capability of the Forest is not expected to change significantly by alternative, the Forest's ability to respond to losses caused by rangeland pests (labops, grasshoppers, Mormon crickets) would change according to funding. Thus, low budget alternatives (ex. Constrained, Current Budget Alternatives) would seriously hamper the Forest's ability to control rangeland pests. Rangeland pests historically have not been considered a significant threat, Forest budget levels at Current Program levels should be sufficient to provide adequate rangeland protection.

Timber losses and control effectiveness for insects and diseases affecting the timber resource would vary by alternative. In general, higher harvest level alternatives, by placing a greater number of acres under management, would provide the most effective control for mountain pine beetle, Douglas-fir beetle, Engelmann spruce beetle, western spruce budworm, and dwarf mistletoe. The higher budget levels associated with these higher harvest alternatives would also provide the most latitude in developing new approaches to insect control problems. More funds would be available to anticipate and plan for potential outbreaks, rather than reacting to existing infestations.

A lack of data on root rots affecting the Forest makes prediction of their impact difficult. Presently, thousands of acres of spruce fir have extensive mortality caused by a bark beetle/root rot complex. Management initiatives and surveys are in progress to assess the extent and significance of the problem, and formulate management direction. The emphasis on timber outputs in the Forest's high production alternatives and the correspondingly higher timber budget levels, ensure that management and control efforts would be more likely to be succeed.

c. Air Quality

Probable Impact of Implementing Alternatives. None of the alternatives would significantly degrade air quality. Uncontrolled wildfire would produce the most air pollution on the Forest. This source is recognized being occasionally unavoidable, relatively short in terms of duration, and constitutes a temporary impact to affected airsheds.

Slash burning produces minor air pollution. Burned areas are scattered throughout the Forest and are burned at different times and under weather conditions favorable for smoke dispersal. Even with slash burning resulting from the larger volume harvested under the Market Emphasis Alternative, the smoke could be dispersed without adverse effect upon the airshed.

The additional vehicle travel under some of the alternatives would add only a very minor volume of additional exhaust fumes and dust to the air. These impacts are temporary and insignificant.

The Air Quality Classification of the Forest would remain as Class II in all alternatives.

Unavoidable Adverse Affects. Under any alternative, smoke from wildfire or slash burning will occasionally accumulate in valley bottoms.

Short-Term vs. Long-Term Effects. None of the short-term uses (wildfire, slash burning, vehicle use) is expected to degrade the quality of the airshed over the Forest over the long term.

Irreversible or Irretrievable Commitment of Resources. None of the alternatives would have any irreversible or irretrievable effect upon the Forest's air quality.

Law Enforcement. The Dixie National Forest user groups include publics from local communities, other Utah cities and communities, and other states. The size of the public drawn to the Dixie, coupled with a population growth in these areas, has resulted in an increased use and on the Dixie National Forest. This increased demand by a variety of Forest users is expected to increase law enforcement activities in all alternatives.

The responsive or "support" nature of law enforcement, coupled with changes in management direction by alternative, makes determination of workloads difficult. However, the nature of the law enforcement needs would shift by alternative. For example, under the Forest Non-Market Alternative, the majority of the law enforcement workload would likely be centered on road closures, campground compliance, and activities associated with dispersed recreation. Under the Market Alternative law enforcement activities would likely shift to permit compliance and administrative related problems. Similar shifts in law enforcement focus might be needed for each of the considered alternatives.

C. ECONOMIC EFFECTS

The planning process specified in the NFMA regulations requires consideration of economic efficiency as a basic principle of planning (36 CFR 219.1(b)(13)), in the formulation of alternatives (36 CRF 219.56(f)(1)(v)), in estimating the effects of alternatives (36 CFR 219.5(g)(9)), and in evaluating the alternatives (36 CFR 219.5(h)).

In addition to the NFMA requirements, the Congressionally revised Resource Planning Act Statement of Policy states that ". . . forest and rangeland, in all ownerships, should be managed to maximize their net social and economic contributions to the Nation's well being, in an environmentally sound manner. . ." Further, "The Secretary of Agriculture shall continue his efforts to evaluate the cost-effectiveness of the renewable resource program."

The main criterion used in the economic efficiency analysis is present net value. It is defined as discounted benefits less discounted costs, including only those outputs that can be assigned monetary values. The optimum alternative is the one that maximizes net public benefits (NPB), defined as the overall value to the nation of all benefits less all associated inputs and costs, regardless of whether or not they can be quantitatively valued.

Examples of such benefits include public safety, visual quality, concern for future generations, and diversity of resources. Much of the difference in PNV of the various alternatives is an indication of how a particular alternative provides qualitative and nonquantifiable benefits. Differences from maximum PNV may be considered the opportunity cost of having or achieving greater net public benefits. PNV is not the only criteria used in selecting the preferred alternative. It does, however, measure economic efficiency. The lower PNV of same or the alternatives compared to others can be attributed to either higher costs, lower benefits, or a combination of the two. These lower PNV values represent the opportunity cost of not selecting the option with the highest PNV. There is an inverse relationship between PNV and opportunity costs. As economic efficiency becomes less, (i.e., lower PNV); opportunity costs become greater. Opportunity costs, as the name implies, are the costs of not selecting the opportunity or option to maximize economic efficiency. Indirectly, it is the price paid for the intangibles associated with attaining net public benefits and should not necessarily be considered undesirable.

The economic parameters shown in Tables II-21, 22, and 23 reflect only the monetary portion of the analysis used to evaluate alternatives. Decision makers consider public benefits in addition to economic efficiency in the final analysis.

Some resources produced on the Forest were valued explicitly in the planning process, others were valued implicitly, and some were not valued at all. The benefits shown in the Tables are the result of placing specific dollar values on timber, livestock grazing, recreation, wilderness, wildlife, and increased water yield and minerals. These are the outputs that were explicitly valued in the planning process. Timber values were calculated using timber sale bid prices for timber sold during the period. All other output values were derived from data used in the 1980 RPA and the Regional Guide. All values are in 1978 dollars adjusted to 1982. Appendix B contains a more thorough dicussion on the economic analysis.

TABLE IV-27
DISCOUNTED BENEFITS AND COSTS, 4% DISCOUNT RATE MM$
(1978 Dollars, Inflated to 1/1/82)*

	BENCHMARKS			ALTERNATIVES						
	MIN. LEVEL	MAX. PNV ASSIGN.	CURRENT PROGRAM/A	B	C	D	E	F	G	H
Present Net Value, PNV (Benefits)	230.30	458.81	402.34	419.10	342.86	379.57	416.74	373.66	236.10	324.88
Present Net Value, PNV (Receipts)	-15.47	-74.21	-94.84	-123.18	-68.06	-90.13	-112.15	-126.79	-134.98	-112.35
Present Value of Benefits, PVB	246.62	555.18	529.34	575.53	437.10	500.63	558.96	534.84	402.85	469.75
Present Value of Receipts, PVR	.85	22.16	32.16	33.25	26.18	30.93	30.07	34.39	31.77	32.52
Present Value of Costs, PVC	16.32	96.37	127.00	156.43	94.24	121.06	142.22	161.18	166.75	144.87
PVB by Output										
Recreation	114.17	326.49	290.47	326.90	216.07	260.45	318.48	294.50	166.16	240.11
Range	0	18.74	20.19	20.19	18.74	20.19	15.79	20.53	21.10	22.62
Timber	0	11.95	23.12	23.12	20.77	23.83	22.60	23.41	23.79	23.10
Wildlife (WFUD's)	92.97	130.82	122.59	132.30	115.43	123.23	130.81	122.82	126.60	120.06
Water Yield	0	2.27	8.11	8.11	6.69	8.02	6.33	8.61	9.02	8.26
Minerals	39.02	64.45	64.40	64.45	58.94	64.45	64.49	64.51	55.72	55.14
Other	.46	.46	.46	.46	.46	.46	.46	.46	.46	.46
PVR by Output										
Recreation	.28	7.39	6.08	7.16	2.64	4.10	5.03	7.92	4.87	6.11
Range	0	2.34	2.52	2.52	2.34	2.52	1.99	2.57	2.64	2.83
Timber	0	11.72	22.82	22.82	20.49	23.56	22.32	23.13	23.51	22.83
Wildlife (WFUD's)	0	0	0	0	0	0	0	0	0	0
Water Yield	0	0	0	0	0	0	0	0	0	0
Minerals	.11	.25	.28	.29	.25	.29	.27	.31	.29	.29
Other	.46	.46	.46	.46	.46	.46	.46	.46	.46	.46
PVC. by Program Component										
Timber	0	9.16	42.91	42.91	31.00	42.18	28.05	43.22	50.38	38.54
Recreation	3.37	16.22	15.36	23.69	10.87	16.03	44.70	28.72	26.75	11.55
Wildlife	0	4.81	2.81	7.58	1.18	2.61	5.67	3.17	3.55	3.88
Range	0	5.09	8.31	12.37	5.09	6.53	6.07	12.07	11.01	15.28
Protection	4.14	14.91	6.43	7.60	7.60	6.53	7.61	16.72	15.10	10.37
Other	8.81	46.18	51.18	62.28	38.50	47.18	50.12	57.28	59.96	65.25
Total Forest Budget	16.32	95.48	123.29	152.72	91.37	117.58	139.75	157.50	162.63	140.96
O&M	16.32	82.11	85.46	105.71	64.09	78.51	101.97	108.88	105.66	100.79
Investment	0	13.37	37.83	47.01	27.28	39.07	37.78	48.62	56.97	40.17
Non-Forest Service Costs	0	.89	3.71	3.71	2.87	3.48	2.47	3.68	4.12	3.91
Returns in Treasury	.85	22.16	32.16	33.25	26.18	30.93	30.07	34.39	31.77	32.52

*Direct comparisons of benefits and costs displayed for individual resource outputs provide general indications of relationships but may be misleading because some outputs in multiple use management have common costs of production that cannot be easily separated and attributed to individual resources.

TABLE IV-28
DISCOUNTED BENEFITS AND COSTS, 7 1/8% DISCOUNT RATE MM$

	--------BENCHMARKS---			------------------------ALTERNATIVES------------------------						
	MIN. LEVEL	MAX. PNV ASSIGN.	CURRENT PROGRAM/A	B	C	D	E	F	G	H
Present Net Value, PNV (Benefits)	145.31	263.28	229.85	234.53	210.34	225.82	243.71	218.35	209.29	190.75
Present Net Value, PNV (Receipts)	-9.63	-47.22	-61.36	-80.02	-42.08	-56.25	-70.98	-75.45	-85.12	-69.06
Present Value of Benefits, PVB	155.48	322.77	312.08	335.78	269.92	302.96	334.12	316.03	316.32	281.75
Present Value of Receipts, PVR	.54	12.27	20.87	21.23	17.50	20.89	19.43	22.23	21.91	21.94
Present Value of Costs, PVC	10.17	59.49	82.23	101.25	59.58	77.14	90.41	97.68	107.03	91.00
PVB by Output										
Recreation	69.40	179.62	160.48	179.94	127.72	149.40	182.32	162.75	96.76	133.98
Range	0	11.99	12.78	12.78	11.99	12.78	10.00	13.01	13.31	14.12
Timber	0	6.63	15.58	15.58	14.13	16.48	15.03	16.31	17.19	16.60
Wildlife (WFUD's)	61.32	81.83	77.34	82.56	74.39	78.36	81.82	77.86	79.70	76.93
Water Yield	0	1.59	4.87	4.87	4.13	4.83	3.84	5.22	5.50	4.96
Minerals	24.47	40.82	40.74	39.76	37.27	40.82	40.82	40.88	35.37	34.87
Other	.29	.29	.29	.29	.29	.29	.29	.29	.29	.29
PVR by Output										
Recreation	.18	3.85	3.40	3.77	1.60	2.54	2.89	3.99	2.77	3.28
Range	0	1.50	1.59	1.59	1.50	1.59	1.24	1.63	1.67	1.76
Timber	0	6.48	15.40	15.40	13.96	16.29	14.84	16.12	17.00	16.43
Wildlife (WFUD's)	0	0	0	0	0	0	0	0	0	0
Water Yield	0	0	0	0	0	0	0	0	0	0
Minerals	.07	.15	.19	.18	.15	.18	.17	.20	.18	.18
Other	.29	.29	.29	.29	.29	.29	.29	.29	.29	.29
PVC, by Program Component										
Timber	0	5.21	29.37	29.37	19.51	26.90	17.61	26.87	32.89	24.77
Recreation	2.08	10.35	9.54	14.63	6.77	10.22	28.79	15.30	15.60	7.07
Wildlife	0	2.93	1.74	4.88	.74	1.68	3.44	2.00	2.23	2.42
Range	0	3.25	5.25	7.65	3.25	4.20	3.88	7.55	6.80	9.78
Protection	2.62	9.45	3.88	4.89	4.83	3.93	4.84	10.61	9.59	7.20
Other	5.47	28.30	32.45	39.83	24.48	30.21	31.85	35.35	39.92	39.76
Total Forest Budget	10.17	58.03	79.71	98.73	57.79	74.95	88.87	95.37	104.26	88.31
O&M	10.17	51.03	54.07	67.21	40.78	49.89	65.33	67.34	65.39	63.16
Investment	0	7.00	25.64	31.52	17.01	25.06	23.54	28.03	38.87	25.15
Non-Forest Service Costs	0	.46	2.52	2.52	1.79	2.19	1.54	2.31	2.77	2.69
Returns in Treasury	.54	12.27	20.87	21.23	17.50	20.89	19.43	22.23	21.91	21.94

*Direct comparisons of benefits and costs displayed for individual resource outputs provide general indications of relationships but may be misleading because some outputs in multiple uses management have common costs of production that cannot be easily separated and attributed to individual resources.

The economic efficiency of each alternative is summarized in Table IV-29 and IV-30 for a 4 and 7-1/8 percent discount rate, respectively.

PNV is not the only criteria used in selecting the Preferred Alternative. It does, however, measure economic efficiency. The lower PNV of the different alternatives, compared to the Composite Alternative (B), can be attributed to either higher costs, lower benefits, or a combination of the two. These lower PNV values represent the opportunity cost of not selecting the option with the highest PNV. There is an inverse relationship between PNV and opportunity costs. As economic efficiency becomes less, (i.e., lower PNV); opportunity costs become greater. Opportunity costs, as the name implies, are the costs of not selecting the opportunity or option to maximize economic efficiency. Indirectly, it is the price paid for the intangibles associated with attaining net public benefits and should not necessarily be considered undesirable.

D. SOCIAL EFFECTS

1. Effects on Economic Indicators

Forest Service policy states: "Economic Impact Analysis for appropriate areas shall be included in the analysis of programs and activities which could have significant economic impacts. . ." (FSM, 1972). Accordingly, "appropriate areas" on the Forest were identified and an impact analysis was completed where the potential for "significant economic impacts" was indicated. The economic and social effects analyzed were potential changes in income, employment and population.

The Forest identified and selected two separate impact areas based on (1) location of Forest outputs, (2) affected industries, and (3) population areas. The "West" impact area encompasses the corridor of the economically connected communities along Interstate 15 from Parowan through St. George. The "East" encompasses the east side of the Cedar City Ranger District and the Escalante, Teasdale, and Powell Ranger Districts.

The objective of the impact analysis is to compare the socioeconomic variables for alternative programs. The comparison is between the current base impact and the projected impacts on income, employment, and population for eight alternative programs, including the projected current program. The socioeconomic response of the two impact areas to the alternative management programs is presented in the following tables.

In accord with Forest Service policy, socioeconomic impacts were projected for the years 1990 and 1995. The Forest Service's IMPLAN, an input-output modeling system, was utilized to estimate these impacts. Two input-output models were built corresponding to the two impact areas described above. The Forest interdisciplinary team decided that an employment, income, or population response to a management decision had to be plus or minus five percent or more to be considered significant. Several of the alternative programs are "significant" based on this criterion.

Table IV-31 shows the current Base output levels for the Dixie National Forest and the East and West zones of the Forest. It indicates that range output is somewhat more important in the East zone than in the West. There is no timber output in the West zone. Developed recreation is much more important in the west. Dispersed recreation is of about equal importance in both zones.

Tables IV-32, IV-33, and IV-34 show the projected output levels for the Dixie National Forest, the East zone, and the West zone, respectively, for the eight alternatives for the years 1990 and 1995. Current represents the "current direction" of the Forest. Table IV-32 indicates that range output declines under Constrained Budget and Non-Market Alternatives, particularly under the latter. Outputs increase under the other alternatives, with the greatest increases projected for High Productivity. Timber output is projected to decrease under all alternatives with the largest decrease forecast for the Non-Market. Developed recreation is projected to increase under all alternatives except the Constrained Budget, with the largest increase forecast for the Market Emphasis. Dispersed recreation is projected to increase under all alternatives except RPA 80 and Market Emphasis, with the largest forecast for Composite.

Tables IV-33 and IV-34 show that the changes in range output projected for the eight alternatives are about equally divided between the East and West zones. Alternatives C and E show decreases. Alternatives F, G and H show increases. Alternatives A, B, and D show no change. With regard to developed recreation, output changes are much greater in the West in terms of MRVD's. However, in percentage term the changes are about equal in both zones. Only Alternative C would experience a decline in developed recreation. With regard to dispersed recreation, output changes are about equally divided between East and West. Only Market and RPA 80 experience a decline which would occur in both zones. Timber output, which is confined to the East zone , is projected to decrease under all alternative, with major reductions occurring under the Constrained Budget and Non-Market alternatives.

Tables IV-35, IV-36, and IV-37 show the 1995 projected impacts on income, jobs, and population for the Dixie Forest, the East Zone, and the West Zone, respectively, for the eight alternatives, and the percentage changes from the 1985 BASE. Impacts on income, jobs and population of the 1985 BASE output levels. For the Dixie Forest as a whole (Table IV-35), four alternatives show overall impacts that exceed plus or minus five percent. Composite and High Productivity alternatives show increases that are significantly greater than five percent, Constrained Budget and RPA 80 alternatives show decreases that are significantly greater than five percent, particularly the latter.

The picture changes considerable when the East and West zones are viewed individually. In the East zone (Table IV-36) five of the alternatives shows projected declines in income, jobs, and population that exceed five percent, particularly Constrained Budget, Market and RPA 80. No alternative shows overall increases. In the West zone (Table IV-37), four of the eight alternatives project increases that significantly exceed five percent. Constrained Budget and RPA 80 forecast declines in excess of five percent.

These projections indicate that the current direction of the Forest and most of the alternatives being considered would bring significant changes in the relative economic impacts of the East and West zones on the regional economy. The major factors responsible for these projected changes are the anticipated declines in timber output under all alternatives in the East zone (there is no timber output in the West).

Table VI-38 shows the relative impacts of a unit change in range, timber, developed recreation and dispersed recreation on income, employment and population. For example, a one unit change in timber output (in terms of MMBF) combined with a one unit change in each of the other outputs, split equally between East and West zones, would yield the following results: 63.1 percent of the resulting change in income for the Dixie National Forest would be attributable to timber, 25.37 percent to range, 8.77 percent to dispersed recreation, and only 2.73 percent to developed recreation. It is clear that a unit change in timber output dominates a unit change in each of the other outputs in terms of economic impact, which largely accounts for the outcomes analyzed above.

Table VI-39 shows the direct change in output by industrial sector per/unit of Forest output. The table indicates, for example, that a one unit change in range output (in terms of MAUM) would generate a $49,000 change in the "meat animals and miscellaneous livestock" sector of the local economy. Timber output has a direct effect on "saw and planing mills" and developed and dispersed recreation directly affects eight sectors, as indicated.
Table VI-40 provides more detail regarding the projected economic and population impacts of the eight alternatives. It separates projected income into two categories: wages/salaries and rental income. The projections are made for both 1990 and 1995 (half of the total change from the 1985 BASE is assumed to occur by 1990). Economic and population changes from the 1985 BASE are given for both the East and West zones and the net change is given for the Dixie National Forest as a whole.

2. Effects on Indians, Other Minorities, and Women

Forest policy and management practices encourage equal use and employment opportunities for everyone. The Forest is accessible to low income groups, senior citizens, women, physically handicapped persons, and other minority groups for a wide variety of jobs. This policy is expected to continue under all eight proposed management alternatives. Management's emphasis on the Affirmative Action Program would be about the same for each alternative. Marginally increased job opportunity and results would likely occur under Composite and Non-Market alternatives for the Dixie National Forest as a whole. Significantly reduced opportunity and results would likely occur under Constrained Budget and RPA 80 alternatives. From the perspective of the two zones of influence, significantly reduced job opportunity and results would likely occur under all alternatives in the East zone, whereas significantly increased opportunity and results are likely to result in the West zone under all alternatives but two: Constrained Budget and RPA 80. The 1980 Census data on numbers of minorities for the two zones show:

	Spanish Origin	Not of Spanish Origin	
		Black	Other Races
East Zone	123	4	147
West Zone	537	29	810

3. Lifestyle, Attitudes, Beliefs, and Values

Utah's family-oriented way of life is very outdoor related and access to the National Forest is important. Many groups enjoy picnics or family reunions on Forest lands. Recreational activities, such as skiing, constitute income resources as well as major winter recreational outlets. Although it is a metropolitan area, there is still a strong parochial social environment prevailing.

Many residents have maintained their pioneer heritage and background. The dominant religion of the State, the Church of Jesus Christ of Latter Day Saints, provides many social activities. Many residents of Utah are descended from families who originally settled the area and feel a real affinity for the State.

The overall planning process masks the impacts on individuals. It should be recognized that the Low Budget, Current Budget, Non-Market, and Preservation and Protection Alternatives could have significant negative effects on individuals associated with the timber and grazing industries.

TABLE IV-29
CURRENT BASE OUTPUT LEVELS FOR DIXIE NATIONAL FOREST AND EAST AND WEST ZONES

	Range MAUM	Softwood Sawtimber MMBF	Dev/Rec MRVD	Dis/Rec MRVD
East Zone	67,0	25.6	91.5	410.4
West Zone	48.0	0.0	313.1	441.0
TOTAL	115.0	25.6	404.6	851.3

READEX FICHE

TABLE IV-30
DIXIE NATIONAL FOREST OUTPUT LEVELS
FOR
THE EIGHT ALTERNATIVES: A-H
TOTAL DIXIE NATIONAL FOREST

	Range MAUM		Softwood Sawtimber MMBF		Dev/Rec MRVD		Dis/Rec MRVD	
Current 1985--A Base	115.0		25.6		404.6		851.3	
	Change	New Output Level	Change	New Output Level	Change	New Output Level	Change	New Output Level
Current 1990--A	0.0	115.00	-3.1	22.5	74.5	479.1	33.4	884.70
Current 1995--A	0.0	115.00	-6.3	19.3	149.1	553.7	66.8	918.10
Composite 1990--B	0.0	115.00	-3.1	22.5	78.7	483.3	124.6	974.90
Composite 1995--B	0.0	115.00	-6.3	19.3	157.4	562.0	176.7	1.028.00
Constrained Budget 1990--C	-3.0	112.00	-5.5	20.1	-65.8	338.8	38.4	889.70
Constrained Budget 1995--C	-6.0	109.00	-10.9	14.7	-131.6	273.0	76.7	928.00
Current Budget 1995--D	0.0	115.00	-3.5	22.1	31.2	435.8	43.4	894.70
Current Budget 1995--D	0.0	115.00	-7.0	18.6	62.4	467.0	86.7	938.00
Non-Market 1990--E	-12.5	112.50	-6.1	19.5	39.5	44.1	87.8	939.20
Non-Market 1995--E	-25.0	90.00	-12.1	13.56	78.9	483.5	175.7	1.027.00
Market Emphasis 1990--F	1.0	116.00	-3.2	22.4	78.9	483.5	-65.5	785.80
Market Emphasis 1995--F	2.0	117.00	-6.3	19.3	157.8	562.4	-131.1	720.20
RPA-80 1990--G	2.0	117.00	-1.9	23.7	17.8	422.3	-145.1	706.20
RPA-80 1995--G	4.0	119.00	-3.7	21.9	35.5	440.1	-290.2	561.10
High Productivity 1990--H	5.5	120.50	-2.2	23.4	75.3	479.9	28.8	880.20
High Productivity 1995--H	11.0	126.00	-4.4	21.2	150.6	555.2	57.7	909.00

TABLE IV-31
DIXIE NATIONAL FOREST OUTPUT LEVELS
FOR
THE EIGHT ALTERNATIVES: A-H
EAST ZONE

	Range MAUM		Softwood Sawtimber MMBF		Dev/Rec MRVD		Dis/Rec MRVD	
Current 1985--A Base	67.0		25.6		91.5		410.4	
	Change	New Output Level	Change	New Output Level	Change	New Output Level	Change	New Output Level
Current 1990--A	0.0	67.0	-3.1	22.5	16.8	108.4	16.1	426.50
Current 1995--A	0.0	67.6	-6.3	19.3	33.7	125.2	32.2	442.60
Composite 1990--B	0.0	67.0	-3.1	22.5	17.3	422.4	42.6	453.00
Composite 1995--B	0.0	67.0	-6.3	19.3	35.6	127.1	85.2	495.60
Constrained Budget 1990--C	-1.7	65.3	-5.5	20.1	-14.9	76.6	18.5	428.90
Constrained Budget 1995--C	-3.5	63.5	-10.9	14.7	-29.8	61.7	37.0	447.40
Current Budget 1995--D	0.0	67.0	-3.5	22.6	7.1	98.6	21.0	431.4
Current Budget 1995--D	0.0	67.0	-7.0	18.6	14.1	105.6	41.9	452.30
Non-Market 1990--E	-7.3	59.7	-6.1	19.5	8.9	100.4	42.3	452.80
Non-Market 1995--E	-14.6	52.4	-12.1	13.5	17.8	109.3	84.7	495.10
Market Emphasis 1990--F	0.5	67.5	-3.2	22.4	17.8	109.4	-31.6	378.8
Market Emphasis 1995--F	1.1	68.1	-6.3	19.3	35.7	127.2	-63.2	347.20
RPA-80 1990--G	1.2	68.2	-1.9	23.7	4.0	95.5	-69.9	340.50
RPA-80 1995--G	2.3	69.3	-3.7	21.9	8.0	99.5	-139.9	270.50
High Productivity 1990--H	3.2	70.2	-2.2	23.4	17.0	108.6	13.9	424.30
High Productivity 1995--H	6.4	73.4	-4.4	21.2	34.1	125.6	27.8	438.20

TABLE IV-32
DIXIE NATIONAL FOREST OUTPUT LEVELS
FOR
THE EIGHT ALTERNATIVES: A-H
WEST ZONE

	Range MAUM		Dev/Rec MRVD		Dis/Rec MRVD	
Current 1985--A Base	67.0		25.6		410.4	
	New Output		New Output		New Output	
	Change	Level	Change	Level	Change	Level
Current 1990--A	0.0	48.0	57.7	370.8	17.3	458.20
Current 1995--A	0.0	48.0	115.4	428.5	34.6	475.50
Composite 1990--B	0.0	48.0	60.9	374.0	45.8	486.70
Composite 1995--B	0.0	48.0	121.8	434.9	91.5	532.40
Constrained Budget 1990--C	-1.3	46.7	-50.9	262.2	19.8	460.80
Constrained Budget 1995--C	-2.5	45.5	-101.8	211.3	39.7	480.60
Current Budget 1995--D	0.0	48.0	24.2	337.3	22.2	462.60
Current Budget 1995--D	0.0	48.0	48.3	361.4	44.8	485.70
Non-Market 1990--E	-5.2	42.8	30.5	343.7	45.5	486.40
Non-Market 1995--E	-10.4	37.6	61.1	374.2	91.0	531.90
Market Emphasis 1990--F	0.0	48.5	61.1	374.2	-33.9	407.00
Market Emphasis 1995--F	0.9	48.9	122.1	435.2	-67.9	373.00
RPA-80 1990--G	0.8	48.9	13.7	326.9	-75.1	365.80
RPA-80 1995--G	1.7	49.7	27.5	340.6	-150.3	290.60
High Productivity 1990--H	2.3	50.3	58.2	371.4	14.9	455.90
High Productivity 1995--H	4.6	52.6	116.5	429.6	29.9	470.80

TABLE IV-33
THE 1995 IMPACTS ON INCOME, JOBS AND POPULATION
FOR
THE EIGHT ALTERNATIVES: A-H
AND
PERCENTAGE CHANGES FROM THE 1985 BASE
TOTAL DIXIE NATIONAL FOREST

	Total Income (MM's)	Jobs	Population
Current 1985--A BASE	**19.3980**	**1,325.61**	**6,981**
Current 1995--A	19.6998	1,429.48	7,364
% Change from 1985 Base	1.56%	7.84%	5.48%
Composite 1995--B	21.0111	1,576.33	8,142
% Change from 1985 Base	8.32%	18.91%	16.65%
Constrained Budget 1995--C	17.7722	1,174.22	6,178
% Change from 1985 Base	-8.38%	-11.42%	-11.50%
Current Budget 1995--D	19.4802	1,399.60	7,275
% Change from 1985 Base	0.42%	5.58%	4.22%
Non-Market 1995--E	18.9251	1,418.50	7,320
% Change from 1985 Base	-2.44%	7.01%	4.86%
Market Emphasis 1995--F	17.4951	1,284.91	6,648
% Change from 1985 Base	-9.81%	-3.07%	-4.77%
RPA 80 1995--G	15.6690	1,050.92	5,525
% Change from 1985 Base	-19.22%	-20.72%	-20.85%
High Productivity 1995--H	20.2708	1,488.87	7,715
% Change from 1985 Base	4.49%	12.31%	10.51%

TABLE IV-34
THE 1995 IMPACTS ON INCOME, JOBS AND POPULATION
FOR
THE EIGHT ALTERNATIVES: A-H
AND
PERCENTAGE CHANGES FROM THE 1985 BASE
EAST ZONE

	Total Income (MM's)	Jobs	Population
Current 1985--A BASE	**10.5388**	**672.03**	**4.032**
Current 1995--A	9.9308	614.22	3,684
% Change from 1985 Base	-5.77%	-8.60%	-8.63%
Composite 1995--B	10.4888	692.82	4,186
% Change from 1985 Base	-0.48%	3.09%	3.06%
Constrained Budget 1995--C	8.9225	591.76	3,549
% Change from 1985 Base	-15.34%	-11.94%	-11.97%
Current Budget 1995--D	9.8522	645.64	3,873
% Change from 1985 Base	-6.51%	-3.93%	-3.96%
Non-Market 1995--E	9.0887	618.38	3,709
% Change from 1985 Base	-13.75%	-7.98%	-8.01%
Market Emphasis 1995--E	8.9712	571.40	3,427
% Change from 1985 Base	-14.87%	-14.97%	-15.00%
RPA 80 1995--G	8.5481	526.86	3,160
% Change from 1985 Base	-18.89%	-21.6-%	-21.63%
High Productivity 1995--H	10.3657	669.79	4,018
% Change from 1985 Base	-1.64%	-0.03%	-0.03%

TABLE IV-35
THE 1995 IMPACTS ON INCOME, JOBS AND POPULATION FOR THE EIGHT ALTERNATIVES: A-H AND PERCENTAGE CHANGES FROM THE 1985 BASE
WEST ZONE

	Total Income (MM's)	Jobs	Population
Current 1985--A BASE	**8.8592**	**653.58**	**2,949**
Current 1995--A	9.7691	815.26	3,679
% Change from 1985 Base	10.27%	24.72%	24.78%
Composite 1995--B	10.5223	883.51	3,988
% Change from 1985 Base	18.77%	35.18%	35.22%
Constrained Budget 1995--C	8.8497	582.46	2,628
% Change from 1985 Base	-0.11%	-10.888%	-10.85%
Current Budget 1995--D	9.8522	645.64	3,873
% Change from 1985 Base	-6.52%	-3.93%	-3.96%
Non-Market 1995--E	9.8364	800.12	3,611
% Change from 1985 Base	11.03%	22.42%	22.46%
Market Emphasis 1995--E	8.5239	713.51	3,220
% Change from 1985 Base	-3.78%	9.1%	9.20%
RPA 80 1995--G	7.1209	524.06	2,365
% Change from 1985 Base	-19.62%	-19.82%	-19.79%
High Productivity 1995--H	9.9051	819.08	3,697
% Change from 1985 Base	21.91%	25.32%	25.36%

TABLE IV-36
RELATIVE IMPACT OF RANGE, TIMBER, DEV/REC AND DIS/REC OUTPUTS ON INCOME, EMPLOYMENT AND POPULATION LEVELS

	East	West	Total
Total Income			
Range	9.66%	15.76%	25.37%
Timber	63.10	0.00	63.10
Developed Recreation	1.20	1.53	2.73
Dispersed Recreation	3.94	4.83	8.77
Jobs			
Range	7.333%	11.00%	18.54%
Timber	60.33	0.00	60.33
Developed Recreation	1.50	7.08	8.59
Dispersed Recreation	5.43	7.08	12.52
Population			
Range	7.53%	11.00%	18.54%
Timber	60.33	0.00	60.33
Developed Recreation	1.50	7.08	8.59
Dispersed Recreation	5.45	7.08	12.52

TABLE IV-37
DIXIE NATIONAL FOREST IMPACT DIRECT CHANGE IN OUTPUT BY INDUSTRIAL SECTOR FOR PER/UNIT CHANGE OF FOREST OUTPUT

	Range MAUM (000's)	Softwood Sawtimber MMBF (000's)	Dev/Rec MRVSD (000's)	Dis/Rec MRVD (000's)	Total (000's)
Meat Animals & Misc. Livestock	$49.100				$49.100
Aggregate Agriculture					
Forestry & Fish Trades			$0.389	$0.390	0.779
Aggregate Beverage Processing 1/			0.169	0.170	0.339
Saw & Planning Mills 2/		$256.000			256.000
Wholesale Trades			0.619	0.660	1.279
Aggregate Retail Trades			1.000	0.870	1.870
Hotels & Lodging Trades			0.169	2.070	2.239
Eating & Drinking Trades			0.369	4.259	4.628
Automobile Repair & Service			0.060	0.129	0.189
Aggregate Amusement & Recreation			0.299	0.449	0.748
Total Impacts	$49.100	$256.000	$3.074	$8.997	$317.171
Percent Impact	15.48%	80.71%	0.97%	2.48%	100.00%

1/Aggregate Beverage Processing is only associated with the West Zone

2/Saw and Planning Mills are only associated with the East Zone

TABLE IV-38
CURRENT (Base)
AND
PROJECTED ECONOMIC AND POPULATION IMPACTS
OF
THE EIGHT ALTERNATIVES: A-H

	Wages & Salaries (MM'$)	Rental Income (MM'$)	Total Income (MM'S)	Number of Jobs	Population
Current 1985--A					
West Base	4.7116	4.1476	8.8592	653.58	2949
East Base	5.6724	4.8664	10.5388	672.03	4032
Total Base	10.3840	9.0140	19.3980	1325.61	6981
Current 1990--A					
West Change	0.3412	0.1138	0.4549	80.84	365
East Change	-0.1848	-0.1191	-0.3040	-11.63	-71
Total Change	0.1564	-0.0053	0.1509	69.11	294
Current 1995--A					
West Change	0.6823	0.2275	0.9098	161.68	731
East Change	-0.3696	-0.2383	-0.6080	-23.46	-142
Total Change	0.4127	-0.0109	0.3018	138.22	589
NET IMPACT CURRENT 1995	**10.6967**	**9.0031**	**19.6998**	**1463.83**	**7570**
Composite 1990--B					
West Change From Base	0.4904	0.3242	0.8147	114.96	519
East Change From Base	-0.0050	-0.0032	-0.0082	10.39	62
Total Change	0.4854	0.3210	0.8065	125.36	581
Composite 1995--B					
West Change From Base	0.9809	0.6485	1.62965	229.93	1039
East Change From Base	-0.0100	-0.0064	-0.0164	20.79	124
Total Change	0.9709	0.6421	1.6130	250.72	1163
NET IMPACT COMPOSITE 1995	**11.3549**	**9.6561**	**21.0110**	**1594.75**	**8144**

TABLE IV-38 (Con't.)

	Wages & Salaries (MM'$)	Rental Income (MM'$)	Total Income (MM'S)	Number of Jobs	Population
Constrained Budget 1990--C					
West Change From Base	-0.0033	-0.0014	-0.0047	-35.56	-160
East Change From Base	-0.4913	-0.3167	-0.8081	-40.13	-241
Total Change	-0.4946	-0.3182	-0.8128	-75.70	-401
Constrained Budget 1995--C					
West Change From Base	-0.0066	0.0028	-0.0094	-71.13	-320
East Change From Base	-0.9827	-0.6335	-1.6163	-80.27	-482
Total Change	-0.9893	-0.6364	-1.6257	-151.40	-802
NET IMPACT CONSTRAINED 1995	**9.3946**	**8.3775**	**17.7722**	**1174.21**	**6178**
Current Budget 1990--D					
West Change From Base	0.2314	0.1529	0.3843	50.19	227
East Change From Base	-0.2093	-0.1342	-0.3432	-13.19	-79
Total Change	0.0223	0.0187	0.0411	36.99	147
Current Budget 1995--D					
West Change From Base	0.4628	0.3059	0.7687	100.38	454
East Change From Base	-0.4181	-0.2684	-0.6865	-26.39	-159
Total Change	0.0446	0.0375	0.0822	73.99	295
NET IMPACT CURRENT BUDGET 1995	**10.4286**	**9.0515**	**19.4802**	**1399.60**	**7276**
Non-Market 1990--E					
West Change From Base	0.3175	0.1710	0.4885	73.26	331
East Change From Base	-0.4408	-0.2842	-0.7250	-26.82	-161
Total Change	-0.1232	-0.1132	-0.2364	46.44	169
Non-Market 1990--E					
West Change From Base	0.3175	0.1710	0.4885	73.26	331
East Change From Base	-0.4408	-0.2842	-0.7250	-26.82	-161
Total Change	-0.1232	-0.1132	-0.2364	46.44	169
Non-Market 1995--E					
West Change From Base	0.6351	0.3420	0.9771	146.53	662
East Change From Base	-0.8816	-0.5684	-1.4500	-53.65	-323
Total Change	-0.2464	-0.2264	-0.4728	92.88	339
NET IMPACT NON-MARKET 1995	**10.1375**	**8.7875**	**18.9251**	**1418.49**	**7320**

TABLE IV-38 (Con't.)

	Wages & Salaries (MM'$)	Rental Income (MM'$)	Total Income (MM'S)	Number of Jobs	Population
Market Emphasis 1990--F					
West Change From Base	-0.1424	-0.0251	-0.1676	29.96	135
East Change From Base	-0.6662	-0.1175	-0.7838	-50.31	-302
Total Change	-0.8086	-0.1426	-0.9514	-20.35	-167
Market Emphasis 1995--F					
West Change From Base	-0.2850	0.0502	-0.3352	59.92	271
East Change From Base	-1.3324	-0.2351	-1.5676	-100.63	-605
Total Change	-1.6174	-0.2854	-1.9028	-49.71	-334
NET IMPACT MARKET 1995	**8.7665**	**8.7285**	**17.4951**	**1284.90**	**6647**
RPA-80 1990--G					
West Change From Base	-0.6084	-0.2607	-0.8691	-64.76	-291
East Change From Base	-1.2135	-0.6509	-1.8644	-137.34	-436
Total Change	-1.2135	-0.6509	-1.8644	-137.34	-728
RPA-80 1995--G					
West Change From Base	-1.2168	-0.5214	-1.7383	-129.52	-584
East Change From Base	-1.2103	-0.7803	-1.9906	-145.17	-872
Total Change	-2.4271	-1.3018	-3.7289	-274.69	-1456
NET IMPACT RPA-80 1995	**7.9568**	**7.78121**	**15.6690**	**1050.92**	**5525**
High Productivity 1990--H					
West Change From Base	0.4476	0.0753	0.5229	82.75	374
East Change From Base	-0.1180	0.0315	-0.0865	-1.12	-7
Total Change	0.3296	0.1068	0.4364	81.63	367
High Productivity 1995--H					
West Change From Base	0.8952	0.1506	1.0459	165.50	748
East Change From Base	-0.2357	0.0627	-.1731	-2.24	-14
Total Change	.6595	.2133	.8728	163.26	734
NET IMPACT HIGH PROD. 1995	**11.3196**	**8.9512**	**20.2709**	**1488.87**	**7715**

E. POSSIBLE CONFLICTS

No conflicts have been identified between the objectives of other Federal, State and Local governments, adjacent landowners and Indian tribes and the proposed action. The process of identification of conflicts involved interviews, letters, news releases and state clearing house procedures.

F. ENERGY REQUIREMENTS

The production utilization and protection of forest resources requires the use of energy in the form of fuels and lubricants and in the form of power to convert raw materials to finished material. Conversely energy is produced from forest products in the form of fuel products produced, energy savings from substitute materials and from reduced needs for energy expenditure. This analysis describes the results of the trade off between energy used to obtain forest resources and energy gained from the resources from each of the alternatives. The alternative with the highest net gain of energy is Alternative H - High Productivity. The alternative with the lowest gain is Alternative D - Current Budget.

The following tables summarize the total yields of energy, the energy used and the net gain or loss:

TABLE IV-39
TOTAL YIELDS AND CONSUMPTION OF ENERGY FROM SELECTED FOREST ACTIVITIES* UNDER PROPOSED MANAGEMENT ALTERNATIVES

Alternative	Yield	Consumption	Net Change
		Billon BTU's Per Year	
Current Program	34.133	1.726	32.407
Current Budget	34.148	1.779	32.369
Constrained Budget	33.940	1.491	32.449
Market	33.889	1.867	32.022
Non-Market	33.901	1.601	32.300
RPA-80	34.274	1.861	32.413
High Productivity	34.351	1.818	32.533
Composite	34.208	1.455	32.753

TABLE IV-40
TOTAL YIELDS (EXCEPTING MINERAL ENERGY [1]) AND CONSUMPTION OF ENERGY FROM SELECTED FOREST ACTIVITIES [2] UNDER PROPOSED MANAGEMENT ALTERNATIVES

Alternative	Yield	Consumption	Net Change
		Billon BTU's Per Year	
Current Program	1,772	995	777
Current Budget	1,831	1,048	783
Constrained Budget	1,579	760	819
Market	1,528	1,136	392
Non-Market	1,540	870	670
RPA-80	1,913	1,129	784
High Productivity	1,990	1,087	903
Composite	1,846	724	1,122

[1] Coal, oil and natural gas.

[2] Recreation, road construction and maintenance, timber, water, range, and fire management.

G. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The Plans and its management requirements provide direction to protect natural resources that could be irreversibly affected by management activities. Irretrievable resource commitments refer to resources that are renewable only over a long time period, such as soil productivity, or to depletable resources, such as cultural resources or minerals.

Gravel and rock extracted for road construction and reconstruction is an irreversible action. Mining and dam construction are also examples of activities that represent irreversible commitment of resources.

Extraction of depletable minerals and energy resources is irreversible since the minerals are no longer available in the future. The Forest Service's role is to manage the surface resources to minimize adverse environmental impacts while providing for the exploration and development of the mineral resources.

The irretrievable commitment of natural resources is the production loss or use loss of renewable resources, due to management decisions. This represents opportunities foregone for the time period that the resource cannot be used. Construction of arterial and collector roads, ski areas and developed recreation sites are irretrievable resource commitments because these activities will remove land from productivity. Resource development is foregone in established wilderness areas, while designation of eligible areas as non-wilderness can result in development that will forego further wilderness options.

The following table displays the acres involved with irreversible and irretrievable resource commitments:

TABLE IV-41

	Alternatives							
	A	B	C	D	E	F	G	H
New Road Const.	3606	3606	3300	3691	2503	3733	3691	3733
Gravel Pits	50	50	45	50	50	55	50	50
Mined Areas	700	700	650	700	700	750	700	700
Rec. Sites	1265	1352	1265	1265	1345	1365	1495	1265
Wilderness	83,000	83,000	83,000	83,000	83,000	83,000	83,000	83,000

H. ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED

All activities that occur on the Forest will cause some degree of environmental impact. The degree or severity of the adverse effects are minimized through the Forest management requirements and the management area direction in the accompanying Plan. Some impacts cannot be avoided if management activities occur regardless of alternatives. These effects include:

-Intermittent decrease in air quality due to dust from road construction, maintenance, and use; mineral exploration and development activities; and from smoke due to campfires, prescribed burns, and wildfires.

-Short-term and localized increases in soil erosion and stream sedimentation due to land disturbing activities.

-Short-term changes in the landscape from silviculture and road construction that may be disturbing to Forest visitors.

-Some disruption or change in wilderness recreation opportunities due to mineral leases or activities under the mining laws in designated wilderness.

-Disruption of prehistoric or historic evidence of man's occupancy of the Forest.

-Elimination of small areas from vegetation production due to construction of permanent physical developments such as roads, trails, range structural improvements, and wildlife habitat structural improvements.

-Increased conflicts between recreation use and other land use activities related to commodity production.

-Solitude loss due to increased management and use activities in certain areas.

-Temporary wildlife disturbance in some locations because of increased human activity.

Mitigation measures are included in the Forest management requirements and management area direction. They will limit the adverse effects that cannot be avoided.

The alternatives most likely to produce unavoidable adverse effects are the Current Budget, Market Opportunities, Current Program and Proposed Action. The 1980 RPA, Non-Market and Constrained Budget alternatives would come closest to avoiding adverse effects.

I. SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE OF LONG-TERM PRODUCTIVITY

The relationship between the short-term uses of man's environment and the maintenance and enhancement of long-term productivity is complex. For this analysis, short-term uses are those that generally occur on a yearly basis on some part of the Forest. These include livestock grazing as a use of the forage resource, timber harvest as a use of the wood resource, and recreation and irrigation as uses of the water resource.

Long-term refers to longer than 10 years. Productivity refers to the capability of the land to provide market and non-market outputs and values for future generations. Soil and water are the primary factors of productivity and represent the relationship between short-term uses and long-term productivity. The land allocations and permitted activities must not significantly impair the long-term land productivity.

The Proposed Action (Composite) as well as all other alternatives studied in detail incorporates sustained yield of resource outputs while maintaining resource productivity. The specific direction and mitigation measures included in the Forest management requirements ensure that long-term productivity will not be impaired by the application of short-term management practices. Thus, in every alternative, the Forest's long-term productivity is assured.

The prescriptions and effects of Plan implementation would be monitored to provide data to assure that standards for long-term productivity would be met. Monitoring requirements and standards would apply to all alternatives and are included in Chapter IV of the accompanying Plan.

The Market Emphasis alternative has the highest level of short-term uses, as reflected by the number of acres of vegetative treatment for wildlife, range, and timber management. It results in higher levels of short-term adverse consequences, such as degraded air quality, increased visual impacts, fire hazard, soil loss, and degraded water quality. The Constrained Budget and Non-Market Emphasis alternatives have the lowest level of short-term uses and therefore the smallest number of short-term adverse consequences.

J. NATURAL OR DEPLETABLE RESOURCE REQUIREMENTS

Natural resource requirements for implementing the Proposed Action (Composite) or any of the other alternatives considered in detail require the basic soil and water resources and associated plant and animal communities that comprise the forest and rangeland ecosystems. Lands allocated to various management prescriptions in this planning effort considered the multiple-use benefits and coordinating requirements necessary to conserve these resources. Mitigation measures to ensure resource conservation are included in the Forest and Management Area Direction of the Forest Plan.

Depletable resource requirements include the removal of nonrenewable resources such as minerals or the depletion of a basic resource such as soils. In the case of the mineral resources, once the mineral has been extracted it is gone. Conservation of these resources might be defined as the planned rate of removal. Mitigating measures involved in the location, development, and removal of these resources are considered and may be found in the Forest Plan. Soil depletion through natural or man-made disturbances is also considered and rehabilitation/conservation activities associated with the potential depletion of this resource is planned for in each alternative.

In addition, the extinction of a plant or animal species may also be thought of as depletion of a resource. Protection and improvement of threatened and endangered species habitat has been considered in all alternatives and management direction included in the Proposed Forest Plan.

K. URBAN QUALITY, HISTORIC, AND CULTURAL RESOURCES

Implementing the Plan would not result in the transfer, sale, demolition, or substantial alteration of eligible or existing National Register properties under Federal jurisdiction. Additionally, the Plan would not adversely effect non-federally owned districts, sites, buildings, structures, and objects of historical, architectural, or archaeological significance.

Research natural areas are non-disturbed areas that have values as benchmarks to gauge the effect of man's activities on similar areas.

All alternatives recommend the establishment of the following research natural areas:

-Timbered Cinder Cone	640 acres
-Table Cliff	1235 acres
-Red Canyon	460 acres

Cultural resources, both historic and prehistoric, are considered important, non-renewable resources to be preserved and protected for future generations. USDA Forest Service policy regarding cultural resources is guided by the Presidential proclamation and laws enacted by Congress. Thus, the Dixie National Forest is mandated by Federal legislation to identify, record, preserve and protect these resources.

With the conception of a project, a thorough field survey is conducted to identify existing cultural resources within the projected area of disturbance. If cultural properties are evaluated as significant and eligible for inclusion on the National Register of Historic Places (as outlined in 36 CFR 800), then the effects of the proposed activity upon the significant resources must be determined. The following adverse effects must always be considered.

-Destruction or alternation of the property.
-Isolation from or alteration of the surrounding environment.
-Deterioration or destruction of a property because of neglect.

-Transfer or sale without provisions to preserve and protect the property.
-Introduction of visual, audible or atmospheric elements that are out of character or alter the setting of the property.

Since the beginning of the cultural resources program in 1975, the vast majority (95 percent) of the projects conducted on the Dixie National Forest have been determined as causing "no effect" on the significant cultural resources. The large number of no effect determinations is consistent with principles of management that steer disruptive project actions away from significant cultural properties. For example, significant sites within timber harvest areas are simply flagged and avoided. Most projects conducted on the Dixie National Forest are sufficiently flexible to allow for the avoidance of significant cultural resources. An exception to this is the land exchange which removes the archeological protection from the Federal property as it moves into private ownership.

When a project will adversely effect a cultural property, the effect of the project must be mitigated. In consultation with the Utah State Historic Preservation Officer (SHPO), a plan is developed to salvage the unique characteristics and data that made the site eligible for inclusion on the National Register.

It should be noted that the enacting of any one of the eight management alternatives would not change the nature of the direct impacts to the cultural resource base. Management direction would continue to allow for the avoidance of significant cultural resources where possible. Mitigation plans would be initiated when avoidance is not possible.

Although the selected alternative would not affect cultural resource policy and procedure, it would influence the acreage surveyed annually and the degree to which we expand our knowledge of the cultural resource base. The RPA-80, High Productivity, and Composite alternatives, which emphasize the cutting of timber, reforestation and road construction, would subject a large area to the field survey while increasing our knowledge of the cultural resource base. The Current Program, Current Budget and Non-Market alternatives, which prescribe +2,000 acres a decade (average) of non-structural wildlife habitat improvement, would also increase the Forest's inventory of cultural properties. Habitat projects, consisting of prescribed burns and chaining, are normally conducted in the high site density zones of the pinyon-juniper forest.

CHAPTER VI
CONSULTATION AND LIST OF AGENCIES, ORGANIZATIONS AND PERSONS TO WHOM COPIES OF THE STATEMENT ARE SENT

Overview

This chapter discusses efforts to involve and consult with a variety of publics during formulation of the proposed Plan and draft EIS. It also lists and responds to comments received during the public comment period for the proposed Plan and draft EIS.

The first section of this chapter, CONSULTATION WITH OTHERS BETWEEN THE DRAFT AND FINAL EIS, summarizes the public involvement efforts undertaken throughout the planning effort comment period, and summarizes the general tone of the responses received during the comment period on the proposed Plan and draft EIS.

The second section, PUBLIC COMMENTS ON THE DRAFT EIS AND PROPOSED FOREST PLAN AND FOREST SERVICE RESPONSES, contains all comments received and Forest Service responses to the comments. The letters have been answered individually. The list at the beginning of that section can be used to find any comment submitted.

The third section of the chapter, MAILING LIST, lists all those to whom copies of this statement have been sent. The list was composed in response to direction from the Forest Service Manual, requests for copies, and those who commented on the proposed Plan and draft EIS.

The Forest service has conducted an active public involvement program throughout the Forest Planning process as directed by the National Environmental Policy Act (NEPA). Federal, State, and local government agencies have been informed and consulted. Individual Forest users and interest groups have also had an opportunity to participate.

Prior to publication of the proposed Plan and draft EIS, newsletters, personal contacts by individual Rangers and Forest staffs, and meetings with various interest groups were used to give people opportunities to review issues and concerns and preliminary alternatives.

Consultation With Others Between the Draft and Final Environmental Impact Statements

Summary of Public Participation Activities

The Notice of Intent was published in the Federal Register. The proposed Plan and draft EIS were filed with the Environmental Protection Agency and made available to the public on October 4, 1985. News releases were also prepared for the media in October. About 900 copies of the Summary of the DEIS and Forest Plan and about 200 copies of the DEIS, Forest Plan, and Map Package were distributed to the people and organizations on the Forest Plan mailing list.

The deadline for submission of written comments was January 17, 1986. The schedule for preparation of the Forest Plan and the final Environmental Impact Statement was such that it was possible to include all written comments received by March 22, 1985, even though those comments were received after the comment period closed.

During the months of November 1984, and December 1984, open houses were held at all Ranger District offices to present the proposed Plan to the public and to answer any questions. Also, numerous meetings were held with special interest groups to discuss the Plan. Records of those meetings and open houses are available at the Forest Supervisor's Office, 82 North 100 East, Cedar City, Utah 84720.

Summary of Comments

The Dixie National Forest received 44 separate comments from a variety of interested people and organizations. While most comments were limited to single issues, many covered multiple concerns. All comments received were fully considered by the Interdisciplinary Team and Forest Management Team. Comments were weighted by the issues and information they contained, not by the number of respondents to a particular issue.

Content Analysis

CONTENT ANALYSIS ON DIXIE NATIONAL FOREST PLAN

Management Area Designation

U-18 across the Pine Valley Ranger District should be 2B Management Area. Red Canyon on the Powell Ranger District needs more protective management than 2B management area can give. All 2B Management Areas should be managed to protect their scenic quality. Management Area 9B is represented only on the Teasdale Ranger District; it should have limited application Forest-wide. Boulder Top would change drastically if managed in Management Area 7A; should be its own unique area. Management Unit 1A does not properly manage the forested hills above Navajo Lake; 1A should be revised to include areas outside developed sites. If Management Area 4D is not going to be used, it should not be included in the Plan. Are all riparian areas covered by Management Areas 9A and 9B?

Commodity vs. Noncommodity

Some reviewers felt the Plan promotes too much commercial development at the expense of other "noncommercial" resources. The plan promotes "below cost" grazing and timber harvesting. Utah's real economic potential is from recreational opportunities provided to tourists. On the other side of the coin, users of the Forest commented the Plan cannot lose sight of the traditional uses of the Forest and ignore those people who have earned their livelihood using Forest resources for many years.

Research Natural Areas

Commentors support Table Cliff, Red Canyon, Timbered Cinder Cone being identified as RNA candidates in preferred alternative. In addition, Leeds Canyon should be included in final if possible. Other possible candidates are the eastern flank of the Pine Valley Mountains, south of Black Ridge and north of Silver Reef and "the Twisted Forest" near Cedar Breaks. Agrees with flexibility of identifying additional RNA candidates in the future. Interim management of areas before they are designated should be more specific to provide needed protection. Another commentor thought designation of Box-Death Hollow as an RNA would conflict with CO2 development. RNAs should not blossom into buffer areas to prevent timber harvest in the fringes.

Threatened, Endangered, and Sensitive Species

Other government agencies and the public were concerned management direction as to how these species will be protected is not specific enough. Monitoring program for these species needs to be included in final Plan. Changes in the Sensitive species list proposed; also add rare clover from Boulder mountain. Consultation with FWS required if management activities could affect endangered species.

Vegetation

One reviewer was concerned that no management prescription is aimed directly at retaining natural diversity. NFMA mandate of providing for diversity means least common species deserves most attention. Sensitive plant species should warrant the same management direction as wildlife indicator species.

Recreation

Recreation comments were very general in nature. User fees should be charged to help offset costs of managing Forest. Several felt ORV use should be restricted from erosion-sensitive areas, especially riparian. Conflicts between motorized and nonmotorized users need to be resolved through specific management direction (adopt more management prescriptions from Alternative E into preferred). The Plan's direction to increase trail and trailhead maintenance is supported. Large groups need to have specific camping areas rather than monopolizing other developed areas. Issue addresses problem on conflicting recreational activities but does not adequately resolve it. State of Utah expressed an interest in cooperating in developing an off-highway vehicle plan.

Wilderness/Roadless Areas

Two people discussed the future management of roadless acres and wilderness. Roadless areas should be managed as SPNM rather than SPM to protect their wilderness qualities. The Preferred Alternative needs to have a nondevelopment prescription. Plan claims over 220,000 acres will remain in SPNM by 2030 yet all these acres are open to mineral development, timber harvest, and ORVs.

Wilderness management is a concern because management is classified as semi-primitive and VQO is retention rather than preservation. Limits of Acceptable Change need to be used. Conversion figure for determining capacity needs to be explained. Wilderness management plan should be prepared now not 1990.

Wildlife

Commentors were concerned about all aspects of wildlife management; primarily selection of indicator species, conflicts with livestock, old growth, big game populations, and road closures.

NonMarket Alternative is best for wildlife. Non-consumptive use needs to be more closely addressed. One reviewer felt that identifying the wild turkey, goshawk, and yellowbreasted chat as indicator species was questionable. Another commentor thought deer and elk were the only valid MIS. Bear, cougar, and mountain lion were suggested as MIS. Several people thought wild turkeys were a poor choice because they were a transplant species. Current range condition of big game habitat needs to be displayed. Concerned livestock is given priority over wildlife when conflicting uses. Paunsaugunt Plateau needs wildlife prescription 4B assigned to it to protect summer range of deer herd. Forest should reconsider increasing 10% old growth retention to 15%-20%. Ten percent is not optimal, may only provide for minimum viable populations. Better planning needed for snag placement not just leftovers from timber harvest. Wildlife numbers will suffer because of the heavy road densities proposed in Plan; unroaded areas should remain unroaded. Road closures, after primary use has ceased, should be enforced. UDWR and Forest hunting unit plans need to be closely coordinated. Forest should meet UDWR objective of supporting 2900 elk and more than 500 wild turkeys. Other upland game species should be considered in planning process. One organization supports transplanting elk to the Pine Valley mountains and mountain goats and bighorn sheep to the entire Forest. Plan places too much emphasis on activities detrimental to wildlife and subsequently to sport hunting. Migratory birds of high federal interest (MBHFI) should receive special consideration in all management efforts not just the coal program.

Range

Most of the commentors felt the Plan had a bias of favoring livestock over wildlife. Range of alternatives is inadequate. The value of an AUM is $6.71 more than the actual fee charged and should be compared to the costs of administration and range improvements (value of $5.80 used in Appendix B is more accurate). Too much forage is allocated to this minority interest; equal consideration should be given to wildlife. Reviewer questions whether grazing level can be maintained and not conflict with intensive riparian management. Are there enough good condition acres to allow rotation of fair to poor out of production for rehabilitation? Condition class of range acres should be displayed with accompanying trend. Noxious weeds are a result of poor grazing practices; land will recover if pressure is taken off.

Ranchers felt more importance should be given to predator control. They feel evidence of the livestock industry should not be hidden from view; it's part of our western culture. AUMs permitted should be allowed to increase as range condition improves.

Timber

Comments concerning the timber harvest issue were clearly opposite views; those promoting a larger harvest and the benefits of timber harvest and those concerned with limiting the proposed harvest levels because of poor economics and marginal regeneration.

Those wanting to reduce proposed timber harvest levels felt the Plan stresses the over utilization of timber resource which results in net negative benefits and cash flow. Snag habitat will decline if goal of utilizing insect-killed trees is achieved. The range of alternatives is inadequate because all maintain timber program at current or above level. Plan needs to include documentation of an increase of demand for sawtimber. Sale price used in FORPLAN analysis is 3x higher than actual receipts. Community stability and the need to control insect epidemics are not adequate reasons to continue timber offerings that return 30 cents for each $1 spent. Mill capacities are based on unrealistic double shift operation. Community stability won't be maintained because aspen can't replace pine. Final Plan needs to include detailed site-specific economic suitability analysis for forest lands (do not equate economically suitable lands with efficient lands). By combining aspen harvest levels into ASQ, Forest was able to maintain ASQ at a nondeclining level. Demand for aspen sawtimber is limited; poorest timber investment on the Forest. Regeneration of spruce-fir is marginal, especially on steep slopes and high altitudes. Change from pine belt to aspen and spruce-fir should be explained. Logging on slopes over 40% grade should not be allowed and minimum growth of 20 cubic feet per acre should be adhered to.

Those responding in favor of a timber program stated "Noncash" benefits seem to be tilted in favor of resources other than timber, showing timber in a negative light, further eliminating timber funding; benefits should be more evenly distributed to timber. Conversely, some of the costs should be spread to other resources also. All resources should be treated equally in benchmark and alternative runs; benefits attributed to timber are not reflective of actual net public benefits from timber management. Mandate of the Forest is to manage for multiple use not the greatest dollar return. Allowable sale quantity needs to be revised to approach a level of 35MM per year. Opportunities exist to increase softwood productivity gradually so future supply does not need to decrease. The Composite Alternative should not lock out areas for timber management opportunities simply because they are not economic at the present time. Adjust ten year periods to remove mature and overmature timber within the first 30 years (28-30-MMBF/year); such a change would get the Forest into a vigorous growing condition. Regional market area is national not just local or regional. Amounts of mistletoe and limb rust need to be accurately assessed on the Forest (Is it scattered pockets or 40% of ponderosa stands?). To treat stands susceptible to insect attack only where it is cost efficient could cause problems in the future.

Water

Many people were concerned that riparian areas are not given adequate protection because timber harvesting and livestock grazing are allowed; recommend a program to protect riparian zones from overuse. Plan needs to better display how riparian areas will be improved and what areas are improving. Monitoring program of riparian habitat is impressive but must be able to implement it. State's primary concern is protection and rehabilitation of riparian areas; more actual planned efforts in accomplishing this need to be shown. Teasdale Ranger District is the only district with proposed intensive riparian management; are there others? Natural stream stabilization, not rip rap, should be used. Securing instream flows should not interfere or alter existing water improvements and developments. Value of water per acre-foot is shown as $42 and $58; both are low and values should be from $83 to $263. Plan needs to discuss compliance activities with Utah's antidegradation requirements in terms of specific management activities. Although State of Utah has not adopted any BMPs, soil and water conservation measures need to be used. Agency reviewing the Plan strongly supports treating the watershed restoration backlog. Plan needs to discuss Panguitch Lake Restoration Plan and the measures directed at erosion and sediment control.

Fire

Fire should be used as a management tool to improve timber and forage resources. One reviewer supported the use of natural fire in Box-Death Hollow and Pine Valley Wildernesses.

Oil & Gas/Minerals

Oil and gas industry would like to see tradeoff analysis displayed to see rationale for management decisions to gain public support. Map needed that shows withdrawals and stipulations for mineral activities. Additional information about past mining activity leading to the 5000 claims would be helpful. Tables and categories of mineral potential need further explanation.

One reviewer felt the minerals section lacked any array of alternatives and the EIS failed to disclose the environmental effects of mineral development. No evidence that coal production would increase; needs documentation. Unroaded areas, RNAs, riparian areas, and critical big game summer and winter ranges should be closed or highly restrictive to mineral development.

Utility Corridor

Voltage of transmission line should be raised to 70 kV. Requirement of corridor east of Veyo and near Diamond Fork needs to be revised. Microwave facilities should be shown associated with IPP transmission line. Utility corridor for Garkane hydroplant from Boulder to Escalante is not identified.

Facilities

Supports designation of Boulder-Grover Road as scenic highway. Another commentor questions the reason of converting roads no longer needed to trails and that it appears to be a way to avoid reclamation; reconsider site on Antone Bench. Any small high elevation reservoirs that will be abandoned need to be identified.

National Parks Area

Specific guidelines should be developed for management activities near National Park boundaries, with special attention to air quality and visual impacts. Potential impacts on non-target organisms could result from use of pesticides; input from NPS should be included before any activity take place. Cultural resource coordination outlined should extend to other activities on adjacent lands such as riparian, livestock, and trail management. Final Plan should state there are five proposed National Natural Landmarks within the Forest boundary.

General

How will the Forest implement this Plan without the needed 40% increase in budget? Lack of maps severely inhibits understanding major components of the Plan. Maps showing mineral stipulations, ROS, VQO, and timber sale location are needed for the Preferred Alternative.

The content analysis below presents, in summary form, the major issues raised by the commenters on the proposed Forest Plan. The purpose of this overview is to give a "sense" of what is being said by the public. For detail, individual comments published later in this document should be checked.

List of Persons, Organizations, and Agencies Who Commented

The following persons, organizations, and agencies provided comment on the draft EIS and Forest Plan. They are listed in alphabetical order:

NAME	ORGANIZATION	COMMENT NUMBER
Andrus, Dianne	Wilderness Society Denver, Colorado	024
Bangerter, Norman H.	Governor State of Utah	047
Bishop, Merlin I.	Former Forest Supervisor	023
Bruntmyer, Raymond	Air Force	004
Busch, D.		008
Carter, Dick	Utah Wilderness Association	025
Carroll, Norman	Kane SCD	006
Carver, Alan	Utah Shooting Sports Council	031
Eckberg, Myron	U.S. Department of Housing and Urban Development	002
Flesche, M. M.	Chevron U.S.A., Inc.	036
Fordyce, Dave	Consultant in Forestry	028
Fournier, Ed		017
Fredsall, R. M.	Western Wood Products	029
Frell, Alice I.	Rocky Moutain Oil and Gas	009
Fry, George B.	Consulting Forester	014

Gordon, Gerald E.	Utah Wildlife Federation	030
Henrie, Konroy	Upper Sevier SCD	007
Holy, Francis T.	Soil Conservation Service	011
Hunt, Jay	E and I SCD	026
John, Steven G.		039
Matson, James L.	Kaibab Industries	044
Mieding, James P.	Los Angeles Department of Water and Power	034
Nielsen, Randy T.	Utah Wildlife Leadership Council	037
Pace, David R.	Freemont River SCD	013
Pace, David R.	Canyonlands Soil Conservation	015
Penn, Bradley G.	Marathon Oil Co.	010
Peterson, Cordell L.		020
Poole, Daniel A.	Wildlife Management Institute	021
Poulsen, Marvin		035
Salmon, James E.		022
Schmutz, Don	Dixie, SCD	033
Steed, Sheldon	Escalante Sawmills, Inc.	027
Stewart, Robert F.	U.S. Department of Interior	040
Stonehocker, Jack L.	Colorado River Commission of Nevada	041
Swanson, John R.		016
Tuhy, Joel S.	Utah Public Lands	005
Van Pelt, Nicholas	Utah State University	043
Valentine, Vernon E.	Colorado River Board of California	012
Vinograde, B.		018
Vodehnal, Dale	U.S. EPA Region VIII	042
Walker, Gary L.	Pacific Gas Co.	032
Wells, J. R.	Utah Power and Light	019
Wilkenson, Wilbur	U.S. Dept. of Interior Bureau of Indian Affairs	003
Wilson, J. R.	So. California Edison Co.	001

Public Comments and Forest Service Responses

This section of Chapter VI contains all comments from the public and the Forest Services specific responses to those comments.

All letters were answered individually. The letters appear on the left side and the responses are on the right. To see the response, read the corresponding numbered answer to the right.

RECEIVED
OCT 21 1985
DIXIE N.F.

LETTER 001

Southern California Edison Company
P. O. BOX 410
100 LONG BEACH BOULEVARD
LONG BEACH, CALIFORNIA 90801

R. J. JULIFF
MANAGER
OF
REAL PROPERTIES DEPARTMENT

October 17, 1985

Mr. John V. Lupis
Forest Supervisor
Dixie National Forest
82 North 100 East
P. O. Box 580
Cedar City, Utah 84720

Attention: Forest Planner

Gentlemen:

SUBJECT: Dixie National Forest
Draft Land and Resource Management Plan

In response to your letter of October 4, 1985, Southern California Edison Company appreciates the opportunity to comment on the Dixie National Forest Draft Land and Resources Management Plan.

We are very pleased to see that the Dixie National Forest recognizes utility corridors to the extent shown and described within the texts and maps utilized in the Draft Plan.

Edison, therefore, supports any alternative that includes, as its basis, Appendix D of the Draft Environmental Impact Statement APPENDICIES entitled "Transportation and Utility Corridor Evaluation."

Again, we thank you for this opportunity to comment on the plan, and commend the Dixie National Forest for recognizing the need to plan for utility corridors. For further information and/or future correspondence, please contact J. R. Wilson at (213) 491-2880.

Very truly yours,

R.J. Juliff

1021s

U.S. Department of Housing and Urban Development
Denver Regional Office, Region VIII
Executive Tower
1405 Curtis Street
Denver, Colorado 80202-2349

LETTER 002

October 25, 1985

Mr. John V. Lupis
Forest Supervisor
Dixie National Forest
P. O. Box 580
Cedar City, Utah 84720

RECEIVED
OCT 28 1985
DIXIE N. F.

Dear Mr. Lupis:

This is in response to your October 8, 1985, letter requesting comments on the Draft Environmental Impact Statement (DEIS) for the Dixie National Forest in Washington, Iron, Garfield, Kane, Piute, and Wayne Counties, Utah.

Your DIES has been reviewed with consideration for the areas of responsibility assigned to the U.S. Department of Housing and Urban Development. This review considered the proposal's compatibility with local comprehensive planning and impacts on urbanized areas. Within these parameters, we find this document adequate for our purposes.

If we may be of further assistance, please contact Mr. Myron Eckberg, Environmental Specialist, at (303) 844-3102.

Sincerely,

Robert J. Matuschek
for Director
Office of Community
Planning and Development

UNITED STATES GOVERNMENT

memorandum

DATE: OCT 2 3 1985

REPLY TO ATTN OF: Acting [illegible]
Navajo Area Director

SUBJECT: Review of Draft EIS and Proposed Land and Resource Management Plan for the Dixie National Forest, Utah (ER 85/1513)
EA-85-140

TO: Regional Environmental Officer, Denver

The subject environmental documents have been reviewed. The Dixie National Forest is not within or near our area of jurisdiction, therefore, we have no comments.

Thank you for the opportunity to review the draft documents.

Milton L. McMahon

cc: 204-BIA Pres. Officer

RECEIVED
OCT 27 1985
DIXIE N.F.

OPTIONAL FORM NO. 10
(REV. 1-80)
GSA FPMR (41 CFR) 101-11.6
5010-114
U.S. Government Printing Office: [illegible]

DEPARTMENT OF THE AIR FORCE
AIR FORCE REGIONAL CIVIL ENGINEER CENTRAL REGION
1114 COMMERCE STREET
DALLAS, TEXAS 75242

19 NOV 1985

Mr. John V. Lupis, Forest Supervisor
United States Department of Agriculture
P.O. Box 580
Cedar City, Utah 84720

Dear Mr. Lupis

Thank you for allowing us the opportunity to review the Draft Environmental Impact Statement and Proposed Forest, Land and Resource Management Plan for the Dixie National Forest, Utah.

We continue to express our support of the Forest Service in developing functional management plans for lands under its control. The Air Force concern for these management issues contains the need to retain use of existing and the establishment of future military flight training areas and routes which may traverse these areas.

Currently several Air Force air operations including instrument flight training routes traverse a portion of the study area. Although flight training areas, routes, and airspace requirements of the military are subject to change and do change frequently, it is not anticipated that new routes will be established in the immediate future.

Mission requirements, fuel costs and environmental constraints determine the decision to locate military training activities. Because of general aviation and population pressures, low level high speed flights are relegated to areas which are least accessible and sparsely inhabited. Therefore, we request that you give full consideration to how planning and management decisions made by your agency may adversely affect or restrict use of low altitude airspace by the military. The Air Force position on this matter is based on the high training and readiness values rendered by use of this low altitude airspace.

We are aware of your fire suppression activities requiring the use of aircraft, therefore, our flight crews are cautioned to remain alert for your fire suppression activities especially during the normal fire season and they are directed to avoid such activity by at least 5 nautical (5.76 statute) miles.

We are hopeful this information is useful in your planning. If additional information is needed, our staff point of contact is Mr, Raymond Bruntmyer, (214) 767-2514, or FTS 729-2514.

Sincerely

DON-MICHAEL BRADFORD, Major, USAF
Director, Environmental Planning Division

Cy to: HQ USAF/LEEV
AFRCE-WR/ROV

RESPONSE TO LETTER 004

We have copies of the flight information publication AP/1B. During wildfire operations, we coordinate air space restrictions through FAA. Should we nee to use low altitude air space during controlled burn operations, we will als coordinate this through FAA.

The Nature Conservancy

Utah Public Lands Protection Planning
2225 South Highway 89-91
Wellsville, Utah 84339
(801) 752-4154

December 2, 1985

Mr. John V. Lupis
Forest Supervisor
Dixie National Forest
P. O. Box 580
Cedar City, UT 84720

Dear Mr. Lupis:

Thank you for this opportunity to comment on the Draft Environmental Impact Statement (DEIS) and the Proposed Land and Resource Management Plan (PLRMP). I welcome this chance to be involved in the planning which will guide the future direction of the Dixie National Forest.

Let me preface my comments with some brief words about The Nature Conservancy. The Conservancy is a non-profit conservation organization whose purpose is to assure the maintenance of natural biological diversity. This means that we identify and seek protection for examples of the full array of ecosystems and species in the natural world. We are focusing our resources on those parts or "elements" of the natural world which are the most scarce: rare plant and animal species, rare communities, and undisturbed examples of common communities.

The Conservancy's Rocky Mountain Heritage Task Force functions as a region-wide biological data base. They have summarized the best scientific information available on the locations of Utah's rare species and communities. In working with these data, I have found that the majority of Utah's rare species and relict areas occur on federally-administered lands. This is not surprising in light of the fact that about two-thirds of Utah is under federal ownership.

Based on this scientific information, one of my objectives is to work with the Forest Service to assure the maintenance of certain natural areas and rare species on National Forest System lands. Protection of these areas and species can provide scientific, educational and recreational benefits for the people of Utah and specifically for users of the Dixie National Forest.

The Nature Conservancy takes two approaches in its work with the Forest Service. Under a series of Cooperative Agreements, we are assisting the Forest Service with tasks involving the designation of Research Natural Areas. We are also participants in the Forest planning process, realizing that decisions which affect natural areas and rare species will be made through that process.

My comments in the remainder of this letter will deal specifically with the Conservancy's two main topics of interest with regard to the Dixie National Forest's Land and Resource Management Plan; 1) Research Natural Areas, and 2) endangered, threatened and sensitive species.

Research Natural Areas

The Research Natural Area (RNA) designation, discussed in FSM 4063, is an excellent tool to protect the natural and scientific values represented in certain relict remnants of the landscape. The Forest Service recognizes the value of RNA's as baseline areas for monitoring management practices, and as scientific reference areas for studying ecological systems. RNA's are usually established to include undisturbed examples of common types of communities. However, RNA's may also protect uncommon types of habitats or other unusual situations.

Under three Cooperative Agreements with the Forest Service, the most recent being Supplement Number 22-C-5-INT-59, the Conservancy is assisting Region Four and the Intermountain Station with the inventory and establishment of new RNA's. In 1982 and 1983, my associates and I assessed the RNA potential of five specific sites on the Dixie Forest. Of these, we recommended three as worthy of RNA designation. I am pleased to see that these three -- Table Cliff, Red Canyon, and Timbered Cinder Cone -- are identified as RNA candidates through all alternatives in the DEIS, especially in the preferred alternative (the Proposed Plan). I strongly urge you to retain these three areas as RNA candidates in the Final Plan.

Table Cliff, Cinder Cone, and Red Canyon will remain proposed Research Natural Areas in the final Plan.

In 1984 I investigated the RNA potential of a chaparral site in Leeds Canyon on the Pine Valley District. My recommendation in favor of RNA candidacy for this site has not been incorporated in the draft planning documents. Meetings with Forest personnel in 1985, including a look at the area in November 1985, resulted in the drawing of an acceptable RNA boundary (see attached Map 1). A member of the Forest Service's Intermountain RNA Committee agreed that this site is a good RNA candidate. I therefore respectfully request that this Leeds Canyon site be analyzed for inclusion as a candidate RNA in the Final EIS and Final Plan. If the Leeds Canyon site cannot be so incorporated, then I would urge you to go on record as supporting its designation by appropriate methods after the Final Plan is approved.

We intend to continue analyzing the Leeds Canyon proposed Research Natural Area but we will not include it in the final Plan.

In June of 1985 I was assisted by Escalante District staff in trying to locate a prospective RNA which would be representative of commercial ponderosa pine stands on that District. Two or three potential areas were found. However, these have not yet been investigated in sufficient detail to request inclusion of the best site(s) in the Final EIS and Final Plan. When such investigation has been completed, I would urge that the chosen site(s) be analyzed for RNA establishment using procedures subsequent to the approval of the Final Plan.

The previous two paragraphs suggest an important point: The inclusion of candidate RNA's in approved Forest Plans should not be seen as the end of efforts to build a system of RNA's in the Intermountain Region. Gaps will still remain in the system. Some of these gaps may be filled by establishing carefully-selected RNA's on the Dixie Forest after your Final Plan is approved. Your concurrence with this policy is stated on page II-14 of the DEIS: "Additional Research Natural Areas may be established if suitable areas exist and are needed." Further, on page IV-19 of the PLRMP is it stated that "Analysis of additional candidate areas will continue."

The Conservancy will continue to work closely with the Dixie Forest and the Intermountain RNA Committee on future RNA proposals. One example is an Escalante Ponderosa Pine site, as mentioned above. Other possibilities include a Boulder Mountain spruce site, plus areas visited in 1982 and 1983 which were neither recommended nor rejected for RNA status. As additional qualified RNA candidates are located, we will be glad to work cooperatively toward their establishment.

In general, I support the treatment given RNA candidates in the draft planning documents. I note that RNA establishment is included as a Goal in the Forest Direction section of the PLRMP (page IV-4). You have concurred with recommendations of the Intermountain RNA Committee and the Conservancy by identifying three RNA candidates in all alternatives. You appear to have stated your willingness to consider future RNA proposals as they arise. These actions show a good commitment on the part of the Dixie National Forest to contribute to a system of RNA's in the Intermountain Region. They also show a commitment on your part to deal with the RNA requirements in the National Forest Management Act.

I have a series of comments which concern how the planning documents treat (or should treat) the management of propdsed and established RNA's. In some cases, I will lend support to specific statements and policies which have been included in the draft planning documents. I will also suggest some specific additions or clarifications which could result in improving the Final EIS and Final Plan.

It is important to provide protection for proposed RNA's while they are being considered for formal designation. I see that you accomplish this by applying management prescription 10A to proposed RNA's. I assume that the same prescription will then apply to those areas which are subsequently designated as RNA's.

It is also important to state a contingency for proposed RNA's whose establishment is rejected. You have done this by stating that such areas will be managed according to the Management Prescription: General Forest Direction. As an alternative to this policy, I would propose that sites rejected for RNA status be considered for some type of appropriate Special Interest Area (Botanical Area, Geological Area, etc.) designation on a case by case basis. I believe that it is important to retain some special recognition for relict or little-disturbed areas in the event that they are found unsuitable as RNA's.

I found the direction for Management Area 10A to be quite comprehensive in outlining the requirements for RNA's. Based on my experience assisting the Forest Service on RNA proposals, I have some suggestions on strengthening the treatment of RNA's within this prescription:

- Under Management Direction for a Wildlife-related Practice, include the statement: "Prohibit the introduction of exotic wildlife species into RNA's, or into adjacent areas from which such wildlife can easily spread into RNA's." [I raise this point because it has become an issue of some controversy on at least one other National Forest in Utah.]
- Under Management Direction for the Range Resource Management Practice (D07), add the statement: "2. Prohibit range improvements."
- Under Management Direction for a Timber-related Practice, include the statement: "Closed to fuelwood gathering."
- Add "Minerals Management (Leasables) (G02-07)" under the Practices/MIH Code column. There are two choices for the accompanying Management Direction, either of which can be applied on a case by case basis:
    - A statement which recommends against or denies mineral leasing in RNA's can be justified based on the irreversible and irretrievable criteria documented on page IV-44 of the PLRMP.
    - At a minimum, a statement of No Surface Occupancy for RNA's is necessary. This is called for on page IV-41 of the DEIS, and can be accomplished by using special stipulations 1, 3, or 11 as listed in Appendix H of the draft planning documents.
- Under Management Direction for the Transportation System Management Practice (L01 and 20), add the statement: "2. Motorized vehicles are restricted to certain designated roads and trails, if any exist."

Your suggestions for management direction additions in Management Unit 10A will be incorporated in the final Plan. No Surface Occupancy for leasable minerals will be the management direction for minerals.

In addition to management prescription 10A, the draft planning documents contain other statements which directly or indirectly relate to management of RNA's. For the most part, such statements lend background support to the prescription 10A. The following comments refer to these other management-type statements.	
I see that timber within RNA's is classified as "not available" for harvest (DEIS page III-25, PLRMP page II-25). It is good that this policy has been stated specifically, as justification for the prohibition on logging included in prescription 10A.	
Discussions of locatable, leasable and common variety minerals (DEIS Chapter III, PLRMP Chapter II) make no reference to potential conflicts with proposed RNA's. Reports written by The Nature Conservancy for the Table Cliff, Timbered Cinder Cone, Red Canyon and Leeds Canyon sites document this lack of conflict, even though oil and gas leases are almost ubiquitous. Future proposals for additional RNA candidates will take into account the likelihood of energy or mineral development on each site. It is Forest Service policy to proceed toward RNA establishment of most qualified sites which contain mineral values, realizing that a few areas might be subsequently disturbed by mineral development if economic conditions change.	
Regarding oil/gas leasing in particular, I previously suggested that management prescription 10A (RNA's) include mention of No Surface Occupancy stipulations or even lease-denial, as appropriate. I would also recommend that lease limitation or denial be applied to RNA's within the Forest-wide Standards and Guidelines, specifically as a fifth category under Standard/Guideline "B" on page IV-44 of the PLRMP.	No Surface Occupancy will be added for Research Natural Areas in the General Direction.
Appendix D of the PLRMP notes the proximity or overlap of the Johns Valley-Upper Valley-Main Canyon utility/energy planning window with the proposed Table Cliff RNA (pages D-17, D-28). If the map for Alternative B shows the boundary of this window accurately, then there is negligible overlap. In the event that there is future conflict between energy or transportation facilities and the proposed RNA, I urge that they be resolved in favor of the RNA. I further request that this be stated specifically in the narrative management direction for this planning window (pages D-38-39).	The north boundary of the Upper Valley Window has been adjusted to a more southerly location than that shown on Draft Map for Alternative B. This change was made to reflect potential conflicts between utility corridor uses and management area prescriptions for semi-primitive recreation opportunities (2A Areas). The Table Cliff RNA will not be overlapped by the new window boundary location.
An objective under Forest Goal No. 7 (PLRMP page IV-3) calls for the Forest travel plan to be reviewed annually and revised as necessary. As RNA's become established on the Dixie, there will be an immediate need to revise the travel plan to show the appropriate travel restrictions in those areas.	This is a good suggestion. We will include this in our travel plan as an item for annual consideration in the annual update.

A monitoring program which, at a minimum, periodically checks RNA's for intrusions and alterations should be incorporated into the Implementation chapter of the Final Plan.

In addition to commenting on the management of RNA's, I would like to make some editorial comments regarding the treatment of these areas in the planning documents.

The most detailed descriptions of the candidate RNA's appear on page III-46 of the DEIS. Mention of these areas also appears elsewhere in the DEIS, and on page II-46 of the FLRMP. It is important to have descriptions of candidate RNA's in the EIS and Plan, and I commend you for having included them. However, the locational information shown on DEIS page III-46 does not quite match such information provided in the reports written by The Nature Conservancy -- which I assume you have chosen to follow. The description of features in each area could also be expanded. In the interest of accuracy and completeness, I recommend that the RNA descriptions be reworked to appear in the Final EIS and Plan as follows:

Table Cliff - About 1300 acres in Sections 32, 33 and 34 of T35S R1W, and Sections 3, 4 and 5 of T36S R1W. Principal features include forests of Engelmann spruce-subalpine fir and lower-elevation mixed conifers. Small wetlands and Wasatch-limestone cliffs add variety to the area. Old bristlecone pine trees grow along the cliff rims. Populations of at least six endemic plant species are present.
[Note: The size of 1300 acres (versus 1235 acres) was reported in the revised Establishment Report dated May 4, 1984, which was transmitted to the Dixie National Forest by the Intermountain RNA Committee in December, 1984.]

Timbered Cinder Cone - About 640 acres in Sections 28 and 29 of T37S R8W. Principal features include relict forests representative of two habitat types in the subalpine fir series. Patches of pure Engelmann spruce occur out into the lava which completely surrounds the Cone.

Red Canyon - About 475 acres in Sections 14, 15, 22 and 23 of T35S R4-1/2W. Principal features include forests of ponderosa pine and Douglas fir, plus woodlands of piñon-juniper and curlleaf mountain mahogany. Floristic differences between limestone and basalt parent materials are quite evident. The area is noteworthy as a center of plant endemism, containing populations of at least thirteen endemic plant taxa, four of which are candidates for possible listing as endangered or threatened.
[Note: The size of 475 acres (versus 460 acres) was reported in my proposal dated May 18, 1984, which was transmitted to the Dixie National Forest on May 22, 1984.]

The combined acreage of these three sites totals 2415 acres. This is a very small increase over the 2335 acres reported in the draft planning documents, and an insignificant increase considering the nearly 1.9 million acres comprising the Dixie National Forest.

A monitoring program will be added to the implementation plan chapter.

Your descriptions of the Research Natural Areas and acres will be incorporated in the final Plan.

This revised figure of 2415 acres would have to be shown on the narrative page for Management Area 10A in the Final Plan. Also, a similar change (2.4 M acres versus 2.1 M acres) should be made in tables which show acreage assignment by management area prescription; DEIS Table II-18, Appendix B Table BII-1, and Appendix B Table BVI-10.

The maps which accompany the DEIS and PLRMP do not all accurately show the boundaries of these three RNA candidates. Rather than trying to describe these inaccuracies here, I have attached Maps 2, 3, and 4 which show the respective boundaries of Table Cliff, Timbered Cinder Cone and Red Canyon, as proposed by The Nature Conservancy. To my knowledge, these boundary proposals have so far been accepted by the Dixie National Forest. In the interest of accuracy, I would suggest that these correct boundaries be shown on the Management Area map accompanying the Final Plan.

If the Leeds Canyon site is nominated as a candidate RNA in the Final EIS and Plan, then its description would read as follows;

Leeds Canyon - About 1100 acres in Sections 10, 11, 14, 15, 22 and 23 of T40S R14W. Principal features include evergreen chaparral shrublands and piñon-juniper woodlands, plus fragments of gambel oak-mountain mahogany woodlands.

Appropriate acreage adjustments and map-depiction would also need to accompany this recommendation of RNA candidacy for Leeds Canyon.

I found the RNA references within Short-Term Uses vs. Long-Term Productivity and Irreversible and Irretrievable Commitment of Resources (DEIS pages IV-13, IV-49) to be well done. I particularly agree with the statement that alteration of a natural area by human activities often is not reversible for scientific purposes. Unnatural alteration of natural ecosystems diminishes or destroys their value as a scientific baseline.

I am also pleased to see that the Dixie National Forest considers established RNA's as part of its desired future condition (DEIS page IV-19), and that continuation of the RNA establishment process is a needed change from present management direction (DEIS page II-59).

Let me conclude my remarks about Research Natural Areas with some general observations. I believe it is safe to say that designation of the recommended candidates as RNA's will have negligible impact on Forest resource outputs or local socioeconomic conditions. The Dixie National Forest is in an excellent position to fill gaps in the Regional RNA system with minimal management conflict.

The Leeds Canyon area will continue to be analyzed but will not be included in the final plan.

The Nature Conservancy will continue to cooperate in the process of formal RNA designation. I have already prepared or revised draft Establishment Reports for the Table Cliff and Timbered Cinder Cone sites. My proposal for the Red Canyon RNA can easily be rewritten into the required Establishment Report format. My associates and I are also prepared to gather necessary information and write reports for additional qualified RNA candidates discovered on the Dixie. As I mentioned earlier in this letter, the Conservancy will continue to work closely with the Dixie Forest and the Intermountain RNA Committee on RNA proposals.

Endangered, Threatened and Sensitive Species

My comments concerning endangered, threatened and sensitive species on the Dixie are arranged into two main subtopits: 1) adequacy of protection policies and strategies, as stated in the draft planning documents, and 2) specific composition of special species lists.

Protection Policies and Strategies

The Forest Service Manual is quite clear on how Forest Plans must treat rare species conservation. FSM 2670.45.1 calls for Forest Supervisors to ensure that legal and biological requirements for the conservation of endangered, threatened and proposed plants and animals are met in Forest land and resource planning. FSM 2672.31 says that Forest Plan objectives for Federally listed species must relate to the overall goal of effecting recovery and achieving eventual delisting, and that management to achieve species recovery levels is required by law. FSM 2672.32 says that Forest Plans must include objectives to ensure viable populations of sensitive species throughout their geographic ranges.

I therefore tried to assess how the Dixie's draft planning documents responded to the above requirements. A synopsis of relevant statements which I found is as follows:

- Regardless of which alternative is finally implemented, the habitat of threatened or endangered species would be managed so that present population levels are maintained or increased (DEIS page II-42).

- The Forest recognizes its obligation (in FSM 2670.2 through 2670.32) to maintain viable populations of threatened, endangered and sensitive plants and animals (DEIS page IV-23).

- Forest Goal No. 17 calls for the management of classified species habitat to maintain or enhance the status of those species through direct habitat improvement and agency cooperation (PLRMP page IV-6).

- Included in the desired future condition of the Forest are maintenance of current habitat of threatened and endangered species (PLRMP page IV-20), and maintenance of sensitive plant species (PLRMP page IV-21).

- General management direction calls for the Forest to manage and provide habitat for recovery of endangered and threatened species (PLRMP page IV-34). [This Forest-wide direction is not specifically weakened or otherwise amended by management direction for any of the nineteen management area prescriptions (PLRMP pages IV-58-159).]

I see no particular reason to criticize these policy statements. My major concern is that the PLRMP contain sufficient detail as to how these conservation policies will be carried out.

The draft planning documents provide for limitations on potentially harmful activities in areas where rare species occur. Special stipulations for oil and gas leasing, energy/utility corridor evaluation, and coal unsuitability criteria are examples of such limitations.

There is no doubt that such limitations or restrictions are necessary; FSM 2670.45.6 speaks to this issue. However, superior strategies to effect stated conservation policies are "proactive" measures called for in FSM 2670.45.2 and 2670.45.4:

- Determine distribution, status and trend of threatened, endangered, proposed, and sensitive species and their habitats on Forest lands.

- Develop quantifiable recovery objectives and develop strategies to effect recovery of threatened and endangered species. Develop quantifiable objectives for managing populations and/or habitat for sensitive species.

The PLRMP's response to these measures is generally favorable. Participation in recovery efforts and/or habitat improvement for certain species is mentioned on pages II-19-20 and IV-20. A commitment to determine distribution and status of rare species (for which such information is unknown) is documented on page IV-6. I would like to see the Final Plan include a commitment to formulate management objectives for sensitive species whose status is not yet known, once those statuses have been determined.

It is very important to have mechanisms in place for monitoring the progress of inventories and the effectiveness of protective measures. I see no mention of a monitoring/evaluation program for T, E and S species (other than Bonneville cutthroat trout) in Chapter V of the PLRMP. I believe that it necessary for such a program to be included in the Final Plan.

1. Point well taken. Added to IV-6, Goal 17, obj. d.

2. Monitoring and evaluation are only required for MIS, and T, E, & S spp. only need to be included as MIS if they are likely to be significantly affected by plan actions. Our determination was that none would be (other than possibly the BCT).

Composition of Special Species Lists

The composition of special species lists is important because protective measures need be applied only to those species which really require such protection. The Conservancy's Rocky Mountain Heritage Task Force has developed lists of plant and animal species of special concern in Utah. For the most part, such species occurring on or near the Dixie have already been given special recognition by the Forest (DEIS pages III-19-20, PLRMP pages II-19-20).

Our scientific information indicates that one addition to the Forest's list of Sensitive animal taxa may be appropriate. The Virgin River spinedace (*Lepidomeda mollispinus mollispinus*) occurs in the Virgin River drainage near a part of the Dixie Forest. If potential habitat exists on the Forest, then this species should be added to the list of Sensitive animals.

The draft planning documents identify 21 plant species of concern on the Dixie. I have reproduced this list below:

Taxon	TNC* rank	Federal status	Current DNF status
Astragalus barnebyi	--	3c	S
Astragalus lentiginosus var. *ursinus*	--	2	S
Astragalus limnocharis	--	3c	S
Astragalus perianus	G3S3	T	T
Castilleja aquariensis	G1S1	1	S
Castilleja parvula var. *parvula*	--	3c	S
Castilleja parvula var. *revealii*	G1S1	2	S
Cryptantha ochroleuca	--	2	S
Cymopterus minimus	G3S3	2	S
Erigeron proselyticus	G2S2	3c	S
Eriogonum aretioides	G1S1	2	S
Gilia caespitosa	G1S1	1	S
Heterotheca jonesii	G1S1	2	S
Lepidium montanum var. *neeseae*	--	2	S
Lomatium minimum	--	3c	S
Penstemon bracteatus	G2S2	2	S
Penstemon concinnus	G2S2	2	S
Penstemon parvus	G2S2	3c	S
Psoralea pariensis	G1S1	2	S
Silene petersonii var. *minor*	G3S3T1	1	S
Townsendia alpigena var. *minima*	--	3c	S

* An explanation of the Conservancy's ranking system in included with this letter as Attachment 1.

Our information indicates that there is no habitat for the Virgin River spinedace on the Forest. If you know of a specific location where they are likely to occur, we would appreciate hearing from you.

Of the twenty plant taxa considered as Sensitive (S), I question the need for three to be on this list. Lomatium minimum and Townsendia alpigena var. minima are both apparently common enough on the Dixie to justify their removal from the list. Our information shows that Penstemon concinnus is a west-desert species with no known locations near the Dixie National Forest. This species could be removed from the Sensitive list, unless it is known to occur on or near the Forest.

There are nine plant taxa not currently considered as Sensitive which we propose as additions to the Dixie's list. Our data show these as being sufficiently scarce to justify such addition:

Taxon	TNC rank	Federal status	Proposed DNF status
Astragalus henrimontanensis	G3S3	3c	S
Coryphantha missouriensis var. marstonii	--	2	S
Festuca dasyclada	G3S1	2	S
Haplopappus crispus	G3S3	-	S
Haplopappus zionis	G3S3	-	S
Hymenoxys helenioides	G3S3	2	S
Lesquerella rubicundula	G3S3	3c	S
Silene petersonii var. petersonii	G3S3T2	2	S
Sphaeromeria capitata	G4S1	-	S

The Nature Conservancy is very concerned with the maintenance of rare plants and animals. My comments in this section of the letter have dealt with the treatment of such species in the Forest Plan, along with recommendations for updating your list of species of concern. Beyond these written comments, however, the Conservancy is also willing to work actively with the Dixie National Forest toward the goal of rare species conservation. Such cooperative work could include information-sharing and actual field assistance -- as you require and as our resources allow.

* * *

In conclusion, thank you for considering my comments in the development of the Dixie National Forest's Land and Resource Management Plan. I very much appreciate the interest and support that I have received throughout the Forest during my visits there. I look forward to continuing a good working relationship between The Nature Conservancy and the Dixie National Forest.

Sincerely yours,
Joel S. Tuhy
Joel S. Tuhy
Utah Public Lands Coordinator

You are dorrect on these three plant species. They will be removed from the sensitive plant list in the final plan.

The Forest's Threatened and Sensitive plant list has been updated.

The Nature Conservancy Element Ranking System

The ranking system used by The Nature Conservancy assigns ranks to elements of natural diversity (that is, special plants, special animals, and terrestrial and aquatic ecosystems) according to their relative rarity and endangerment. Two parallel ranking methods are employed: The Global ranking system assigns a rank to the elements according to their status throughout their entire range, while the State ranking system assigns a similar rank that reflects the status of the element within a particular state.

The basic rank is a two-byte code with the first byte being either G or S, indicating a global or state rank, respectively. In some cases the first byte will be a T, which is used for subspecific taxa. The second byte is an integer from 1 to 5, or in somes cases, a letter. Definitions for global element ranks are listed below. Defintions of state ranks can be derived by substituting "in state" for "globally" or in those definitions in which range is specified, the range referred to would be the state range.

Global Element Ranks

G1= Critically imperiled globally because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction.

G2= Imperiled globally because of rarity or because of other factors demonstrably making it very vulnerable to extinction throughout its range.

G3= Either very rare and local throughout its range or found locally in a restricted range or because of other factors making it vulnerable to extinction throughout its range.

G4= Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.

G5= Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.

GU= Possibly in peril range-wide, but status uncertain; more information needed.

GH= Of historical occurrence throughout its range, i.e., formerly part of the native biota, with the implied expectation that it may be rediscovered.

GX= Believed to be extinct throughout its range.

Attachment 1. Explanation
of TNC ranking system.

KANE SCD

comments on the

Proposed Land & Resource Management Plan

for the

Dixie National Forest

1. The SCD feels that the grazing levels permitted in the proposed plan should not remain static at 115,000 AUM's over the period covered in the proposed plan but be allowed to increase as the range condition of the forest improves.

2. The SCD feels that Off Road Vehicles are a detriment to the resources of the forest complicating erosion, damaging valuable forage and vegetation, harrassing of wildlife, and supports restriction of ORV use on sensative areas.

3. The SCD feels that those who use the Dixie forest resources for recreation should be charged a user fee to help offset the cost of managing the forest.

4. The SCD feels that an agressive public education through the media, schools and other information avenues be pursued in order to raise the public conscious toward wise use of forest resources without their degradation.

5. The SCD feels that traditional resource use of the forest such as timbering, grazing, mining continue and not be preempted solely for recreation and aesthetic considerations.

6. The SCD feels that the securing of instream flows to meet Forest needs should not be allowed to interfere with change of diversion points, delivery systems, and other considerations associated with legitimate water conservation projects.

7. The SCD feels that this management plan be made flexible enough so that adjustments to fit reality can be made in an efficient and timely manner. And that those resource value ranges delineated in the planning documents serve as limits within which any need for management change could be termed as an insignificant change not requiring full public input. However, input would be sought from those publics whose livelihoods would be affected by any management change i.e. - changes in grazing management policy would require input from livestock grazing permittees and other such.

Norman Carroll
Chairman Kane SCD

All allotments on the Forest have management plans and range analysis. These documents show that the long term grazing capability for the Dixie National Forest should not exceed 115M AUMS/year.

The Forest Plan proposes to close and restrict areas to ORV use to avoid conflicts with other uses and minimize surface disturbance.

Congress would have to change legislation before fees can be charged for recreation use other than in developed campgrounds. They are currently considering legislation that would change the fee structure to have users pay their way.

The Forest is presently taking a more active roll in trying to inform the public concerning opportunities, regulations, and prudent use of the National Forests.

All uses on the forest are weighed against others before an activity is considered to be feasible. Hopefully this Forest Plan, when finalized, will represent a well designed mix of national forest uses reflective of the many diverse public interests.

The Forest's program of securing minimum instream flow needs should not conflict with the operation of any existing water diversion or transmission facilities on National Forest land. Changes in points of diversion for existing facilities and new diversions will be considered on a case by case basis. These proposals will need to allow for the identified National Forest instream flow requirements if they involve enlarging the extent of dewatered or reduced flow in surface waters (e.g., moving points of diversion further upstream, constructing diversions on previous unimpacted streams, or significantly increasing the volume of diversion at existing facilities.

An effort has been made to provide a balance of resources. Projection of future use do indicate additional demand for recreational opportunities. However, the plan is designed to supply much of this demand in dispersed area and in harmony with other uses such as mining, grazing, and timber production.

UPPER SEVIER SCD

comments on the

Proposed Land & Resource Management Plan

for the

Dixie National Forest

The SCD feels that the campgrounds maintained and operated by the Forest Service not interfere with private industry in providing camping facilities for the public.

The SCD feels that the addition to, construction of, or hardening of campgrounds not be given priority if budgetary projections to implement the proposed plan are not met. We feel that resource degradation is directly porportional to the number of recreationists coming to the forest, and so feel that campgrounds that are more sophisticated and elaborate would encourage more recreation and thus more problems.

The SCD feels that Off-Road Vehicle use on the forest contributes greatly to erosion and therefore supports the Forest plan to restrict sensitive areas to ORV use.

The SCD feels that provisions be included in the management plan to allow it to be modified in an efficient and expeditious manner if reality is different than the projections, assumptions and, other modeling parameters used to construct the plan.

The SCD feels that a policy of total fire suppression in the Dixie National Forest not be persued, but rather those fires which would be beneficial in improving the resources, be allowed to burn under close supervision and only so long as it is beneficial.

The SCD feels that the establishment of a Research Natural Area in the Box-Death Hollow area would be unsuitable as it would interfere with the development of the deposits of carbon dioxide gas in the area.

The SCD feels that the instream flows needed for National Forest purposes not interfer with changes in points of diversion, conveyance systems, hydroelectric developments and other water improvement projects that will enhance the conservation of this valuable resource.

Kenny Harris Chairman
Harold Dewey S.C.D.
Thomas V Hatch S.C.D
Gregory D. Excell SCD
S Leland Riggs SCD

RESPONSE TO LETTER 007

One consideration the Forest Service makes before the construction of new facilities is the availability of private facilities in the area to accommodate the demand. Our campgrounds are developed to accommodate a different segment of the public and avoid conflict with the private sector. We are also coordinating our recreation planning efforts with the Five County Association of Government.

Most of the campgrounds are located at areas that are an attraction for people, such as lakes and creeks. People will camp at these areas even if there is no campground. The campgrounds we have developed minimize the impacts of the camping at the areas.

The monitoting and evaluation portion of the plan provides for opportunities to evaluate the effectiveness of the plan as needed. Section on page V-13 describes the process for revision and amendment.

Forest Serviced policy calls for suppression of all wildfires with a "least cost" suppression strategy. Part of the reason for this policy lies in our intent to pursue claims for damages on man-caused fires. It would be difficult for us to pursue a wildfire claim if we intentionally let the fire grow to a larger size.

However, we are pursuing a prescribed fire policy which allows us to use fire as a management tool when it best meets resource objectives. This policy is described in the Dixie's Forest Plan.

As suggested, the Box-Death Hollow area has not been designated as a Research Natural Area.

The Forest's program of securing minimum instream flow needs should not conflict with the operation of any existing water diversion or transmission facilities on National Forest land. Changes in points of diversion for existing facilities and new diversions will be considered on a case by case basis. These proposals will need to allow for the identified National Forest instream flow requirements if they involve enlarging the extent of dewatered or reduced flow in surface waters (e.g., moving points of diversion further upstream, constructing diversions on previous unimpacted streams, or significantly increasing the volume of diversion at existing facilities.

David E. Busch
1307 Capri Drive
Boulder City, NV 89005

John V. Lupis, Forest Supervisor
Dixie National Forest
82 North 100 East
P. O. Box 580
Cedar City, Utah 84720

9 December 1985

Dear Mr. Lupis:

I have reviewed the Draft EIS and Proposed Forest Land and Resource Management Plan for the Dixie N.F. and wish to submit my comments.

An initial bias was detected in your naming "E" the "Non-market Alternative", as if fish and wildlife habitat or primitive backcountry use have less inherent economic value than the uses expanded in the so-called "Market", "High Productivity", or "Composite" (read: the best of all worlds) alternatives. Generally, the Proposed Alternative (B) is acceptable, particularly regarding plans for developed recreation. However, where backcountry management or disperesed recreation is concerned, this alternative vastly overemphasizes motorized recreation and timber harvest. My general recommendation for resolving specific comments below would be to incorporate more of the prescriptions from Alternative E into the Proposed Alternative.

A major problem with the EIS Proposed Alternative and Management Plan is that they perpetuate the overutilization of timber resources. This would occur far into the "out years" when presumably different forest managers would have the unenviable responsibility of reducing timber leasing. This results in substantial net negative benefits and cash flow (Table II-10a). Deemphasis of this misuse of forest resources could free dollars for other management needs as is evidenced by much lower negative benefits for timber in Alternative E (Table II-13a). The results of this tendency toward timber resource abuse can be found in Management Plan goal 27 (p.IV-8) calling for increased utilization of insect-killed trees. Achieving this goal would be in direct conflict with the resolution of the problem (identified several places in the EIS) of declining Forest snag habitat.

I strongly support additions to non-motorized recreation trails and trailheads, as discussed in little detail on p. II-58 of the EIS. However another major problem which is discussed extensively without being resolved is Issue 13, dealing with conflicting user groups. Aside from areas

There was no bias in the final selection of the preferred alternative. The decision was reached by determining the best use for each section of land given all of the variables. Timber harvesting is only permitted on a small percentage of the forest where the land is capable of producing sufficient growth to keep up with what is being cut. There will be opportunities for recreation on these lands also. The use on these lands will likely be motorized due to the roads that will be constructed for timber harvesting. Other parcels of land will be left natural and these will be available for non-motorized recreation. Some sections of the land where timber harvest is permitted will be closed to motorized travel because it was determined that the land was capable of providing opportunities for non-motorized recreation.

A) Utilization of Dead Timber and Snags. The Forest is continually inventorying snag habitat and these inventories show that the only potential problem with declining snag habitat exists on the Cedar City Ranger District. Problems relate to people pressure and illegal fuelwood removal rather than timber harvest activities. The best methods of addressing the problem are through public education, signing of wildlife trees and increased law enforcement. In timber sale areas, adequate numbers of hard (future snag habitat) and soft snags are left to meet the needs of wildlife populations. Benefits of increased utilization of dead timber include reduction of fire and insect hazards, rejuvination of stands providing wildlife cover and habitat, improved visual resources, fuelwood to meet public demand, and raw materials for local timber industry.

B) Overharvesting - The Dixie has accelerated timber harvest in the recent past in response to a mountain pine beetle epidemic. It is clear that recent volumes of softwood sawtimber cannot be sustained while meeting other goals. The proposed Plan makes up for declining softwood volumes by increasing aspen harvest in the second and third decades. At present, there are no large markets for aspen locally. Consequently, very low fuelwood values were used to value aspen. This picture may change as evidenced in other areas of the country where aspen utilization is increasing. Presently, aspen on the Forest is in a state of decline. Over 90% of the Forests aspen is identified as mature or overmature (reference DEIS, page III-18). Successful prescribed burns in aspen are hard to achieve and timber harvest presents some opportunities to enhance and rejuvinate aspen clones for wildlife and aesthetic purposes. Road closures and other mitigation efforts will be necessary to accomplish these goals, however.

Under the proposed alternative, the needs of wildlife, recreation, water quality, and other resources are met through reductions of the timber base. Of the 678.8 thousand acres of timber land on the Forest 28.5 thousand acres are not available (mainly wilderness). An additional 236.6 thousand acres are identified as not capable of producing industrial crops of wood and 82.5 thousand acres are identified as lands where timber harvest is likely to cause unacceptable resource damage. Of the remaining 331.2 thousand acres of tentatively suitable Forest land, 31.1 thousand acres are identified as not appropriate for timber production due to other resource needs under the goals of the alternative to meet the requirements of law or are not cost efficient in meeting Forest plan objectives over the planning horizon. Some of the suitable timber base of 300.1 thousand is further constrained to ensure proper dispersion of harvest, the retention of tree cover while regenerating understories achieve desired heights, and to limit water yield in some drainages. These constraints help protect the wildlife, visual, soil and water resources of the Forest.

C) Economics. Many of the benefits associated with the use of National Forest Resources, are provided for less than the costs of management and administration. This applies to recreation and wildlife as well as timber and range. In the case of timber, it is felt that the production of nonvalued benefits and those joint resource benefits that are otherwise difficult to quantify, justify such practices where and when there is a bonafied need or demand. Benefits are not fabricated to improve benefit/cost ratios to justify timber harvest projects if they are not needed. For timber, these benefits could include access for recreationists, maintenance of vegetative diversity, reduced risks from fire, insects, and disease, the maintenance of long-term visual resources and a source of raw materials for local industry providing jobs, income, and tax revenue. Additionally, timber costs are increased with little return by providing fuelwood, Christmas trees, and other Forest products to the public. The Forest is presently trying innovative methods to reduce costs and will continue to do so in the future. Improvements in timber prices would also result in a better economic picture.

designated as Wilderness, there is no indication that the Forest Service intends to take any steps to eliminate conflicts between motorized and non-motorized users. For example, the Management Plan states that motor vehicle usage "may" be limited in Semiprimitive Areas. Snowmobiles are even excepted from rules restricting motor vehicles to designated trails in these areas. X-country skiing and (especially) hiking occur at only moderate levels already, undoubtedly because of current almost unrestricted vehicle use. Thus, the lack of attention to this Issue by Forest Service is unacceptable. My suggestions for addressing this Issue include (based on maps and Chapter IV of Management Plan):

1. Snowmobiles should not be excepted, but specifically included in restrictions of motor vehicles to road use only.

2. Wording on motor vehicle usage in Semiprimitive Areas should be changed from "may be restricted" to "shall be excluded from all portions."

3. Semiprimitive Areas in the Cedar City District should be expanded to form a corridor contiguous with Cedar Breaks N.M., Brian Head Ski Area, the Sydney Valley Road, and U-14; This area should include Brian Head and the Sydney Peaks.

4. Timber Management Areas south of Cedar Breaks and those bordering the west boundary of Bryce Canyon, N.P. should all be changed to Semiprimitive Areas.

Note that, the latter two suggestions would bring the Management Plan into much closer accord with the Non-Market Alternative.

Finally, all zones designated for Riparian Management should have motor vehicles and grazing unconditionally excluded. Both of thses uses have been shown to be completely incompatible with the preservation of sensitive southwestern riparian communities.

Thank-you for the opportunity to comment on the EIS and Management Plan.

Respectfully,

David E. Busch

1) Snowmobiles will not be permitted in all of the semi-primitive areas. An Off Road Vehicle Appendix is being prepared at the present time that will identify those areas that will be closed to ORV use. Time would not permit the completion of the ORV Appendix for input into the Forest Plan.

2) The exclusion of motorized vehicles from all semi-primitive areas would exclude some management opportunities for the future. The forest does not feel it is necessary to exclude motorized use to protect an area. The closing of an area to motorized vehicles after another management activity has taken place permits non-motorized recreation and other management activities to coincide on the same land. You will note that the standards and guidelines specify that the visual quality objective for semiprimitive areas should not go below an objective of partial retention. This tells the land manager that what activities he permits on that land must be restricted to the point that when the activity is through the effects of that activity will not dominate the visual landscape. The natural appearance of the area should remain dominant.

3) Under the multiple use concept of the forest, the area around Cedar Breaks will be protected to preserve the scenic quality of the landscape. Activities in this area will be permitted only if they preserve or enhance the landscape.

4) The Forest Plan identifies these lands as being desirable timber producing lands. By designating these areas semiprimitive recreation we maintain the option of managing the area for it's timber potential. This will reduce the stress on other areas to produce more wood fiber to meet the demands of the building industry.

Motor vehicles and grazing are not completely incompatible with the management of riparian areas. Roads for motor vehicles must necessarily cross riparian zones. Off road travel with motor vehicles in riparian areas is highly destructive and is not allowed on the Forest. Grazing in riparian areas does tend to have a deleterious impact on these areas but will be managed to minimize this impact.

Rocky Mountain
Oil & Gas Association, Inc.

Alice I. Frell
Lands Director

345 PETROLEUM BUILDING • DENVER, COLORADO 80202
303/534-8261

RESPONSE TO LETTER 009

December 17, 1985

Mr. Alden T. Schuldt
Forest Planner
Dixie National Forest
P. O. Box 580
Cedar City, UT 84720

Dear Mr. Schuldt:

On behalf of the Rocky Mountain Oil and Gas Association (RMOGA), I would like to offer our comments on the proposed Land and Resource Management Plan (LRMP) and Draft Environmental Impact Statement (DEIS) for the Dixie National Forest in southwestern Utah. RMOGA is a trade association representing hundreds of members who account for more than 90% of the oil and gas exploration, production and transportation activities in the Rocky Mountain West. Because so much of the land in these states is owned by the Federal Government, our members have a special interest in how the agencies manage their lands, particularly with respect to mineral activities.

As evidenced by the proposed action contained in the draft Dixie LRMP and accompanying DEIS, we believe the Forest Service has done an exceptional job of accommodating energy and mineral resource programs on the Forest. Access to Forest lands for purposes of exploration and possible development of these resources is important due to the oil and gas potential existing on the Forest. The Dixie National Forest is located in a geologic region known as the Overthrust Belt, and it is imperative that Federal lands in this region be kept open to mineral opportunities in order that domestic supplies of energy and minerals may be found and developed.

Specifically, we support the Forest's land management decisions which indicate that oil and gas activities have been determined to be compatible with sensitive surface resources. We support the multiple-use management philosophy which dictates that through the use of reasonable stipulations or restrictions, all resource uses may be accommodated without severe, adverse impacts. The oil and gas industry has proven time and time again that exploration for and development of energy resources does not cause long-term, permanent surface damage. Through carefully designed operating plans and reclamation efforts, drilling can be accomplished without noticeable effects to the surface resources. In many cases, surface resources can actually be enhanced through reclamation procedures.

There is one issue, however, we would like to see more fully addressed in the planning documents. This is the Forest's tradeoff analysis. We believe it is important to display this information in more detail in order to afford interested members of the public an opportunity to see the Forest's rationale for its management decisions. While we are aware of the results of this analysis, a more detailed discussion could prove helpful in avoiding public controversy on or opposition to the Forest's decisions.

Another point we would like to address is that even though the Management Area discussions found in the proposed plan include minerals, we would like to see a map which specifically indicates those areas which are subject to withdrawals, no surface occupancy stipulations, seasonal restrictions, and standard stipulations. Such a map would allow members of industry to more adequately determine how their specific operations may be affected by the proposed plan. Commenting on the proposal would also be facilitated by such information.

In conclusion, it is refreshing to review planning documents in which Forest Planners recognize the compatibility and the importance of mineral resources in terms of access and availability. We support the adoption of the Preferred Alternative B. We recognize that Dixie National Forest personnel have had wide exposure to many different types of mineral activities. It would seem that such experience lends itself to a greater understanding of the actual consequences of mineral exploration and development, rather than those imagined or feared. Such experience also lends itself to developing the working knowledge that reasonable compromises can be made in an effort to minimize any adverse effects while still allowing for the exploration for and development of critical resources.

We appreciate the opportunity to provide you with our views. If you would like to discuss our comments in further detail, please do not hesitate to contact me.

Sincerely,

Alice I. Frell

Alice I. Frell
Public Lands Director

AIF:cw

A tradeoff analysis process is presented in Chapter VIII of Appendix B of the DEIS. It is a result of agreements reached between the Secretary of Agriculture and Chief of the Forest Service. We feel this analysis adequately addresses issues and concerns raised in the Forest Planning process. While we have not included a comprehensive trade off analysis in the Plan, our Record of Decision section of the final Plan will provide additional logic relating to our analysis process.

We will display on a matrix information used by the Forest as rationale for management decisions regarding leasing, and development of stipulations needed to protect environmental values. Any needed No-Surface-Occupancy (NSO) or other special stipulations will be identified to lands they apply to by management units, with the special stipulations listed in the respective management unit prescription. An accompanying map will show the location of the management unit.

Marathon
Oil Company

Casper Division
Production United States

P.O. Box 120
Casper, Wyoming 82602
Telephone 307/235-2511

December 16, 1985

Mr. Alden T. Schuldt
Forest Planner
82 North 100 East
P. O. Box 580
Cedar City, Utah 83720

Dear Sir:

Re: Comments on Draft
Dixie Forest Plan
Utah

The proposed action reflects a decision analysis which incorporates trade-offs among resources. The Plan is commendable in its analysis to accommodate mineral resource programs on the Forest.

We feel there are two points which need further clarification. The first would benefit our understanding of the resource trade-offs made and the decisions they were based on. This would entail a more detailed display of the information used by the Forest as rationale for management decisions. Secondly, a map is needed outlining the stipulations and areas withdrawn from leasing.

Thank you for the opportunity to comment on this plan.

Sincerely,

Bradley G. Penn

Bradley G. Penn
Land/Environmental Coordinator

BGP:mg

cc: W. H. Legg
R. L. Lantz
S. O. Nation
R. C. Nelson
K. J. Iler
J. D. Polisini
J. H. Youngflesh

RESPONSE TO LETTER 010

A tradeoff analysis process is presented in Chapter VIII of Appendix B of the DEIS. It is a result of agreements reached between the Secretary of Agriculture and Chief of the Forest Service. We feel this analysis adequately addresses issues and concerns raised in the Forest Planning process. While we have not included a comprehensive trade off analysis in the Plan, our Record of Decision section of the final Plan will provide additional logic relating to our analysis process. Prescriptions for the management units will identify No-Surface-Occupancy and other special stipulations required and an accompanying map will display the management units.

United States
Department of
Agriculture

Soil
Conservation
Service

P.O. Box 11350
Salt Lake City, UT 84147

December 18, 1985

Dixie National Forest
ATTN: Forest Planner
82 North 100 East
P.O. Box 580
Cedar City, UT 84720

Dear Sir:

We have reviewed the Draft Environmental Impact Statement (DEIS) and Proposed Forest Land and Resource Management Plan for the Dixie National Forest. We have no comments.

We appreciate the opportunity to review the documents.

Sincerely,

FRANCIS T. HOLT
State Conservationist

cc: Director, Ecological Sciences, SCS, Washington, D.C.
George Bluhm, Director, WNTC, SCS, Portland, OR

The Soil Conservation Service
is an agency of the
Department of Agriculture

STATE OF CALIFORNIA—THE RESOURCES AGENCY
GEORGE DEUKMEJIAN, Governor

COLORADO RIVER BOARD OF CALIFORNIA
107 SOUTH BROADWAY, ROOM 8102
LOS ANGELES, CALIFORNIA 90012
(213) 620-4480

December 30, 1985

Dixie National Forest
82 North 100 East
P.O. Box 580
Cedar City, Utah 84720

Attn: Forest Planner

Dear Sir:

Thank you for providing our office with copies of the proposed "Land and Resource Management Plan" and the "Draft Environmental Impact Statement" (DEIS) for the Dixie National Forest.

We found it very helpful to have the discussion of water yield improvement in the Colorado River Basin portion of the National Forest separated out as an identifiable segment in these reports. A comparison of water yield under the preferred plan, "Alternative B-Composite", over current levels through vegetation management within the Colorado River Basin indicates an increase of about 75 percent over the 5-decade study period. While absolute number increases are small (an average of about 900 acre-feet per year) because of the nature of the watershed, the selected alternative ranked high as compared to the other alternatives, with the alternative with the greatest increase shown to be about 96 percent over natural conditions. We are pleased to see vegetation management and related water yield increases incorporated in the preferred plan for the water-short Colorado River Basin.

The benefit value used in the DEIS for water yield for each of the alternatives shown on Tables II-9 through II-14 is about $58 per acre-foot. On page II-102 of Appendix B of the DEIS, the benefit value attributed to increased water yield appears to be erroneously shown as $42 per acre-foot. While either of these values represent a significant increase over those used in earlier studies, we feel that even higher values could be justified, ranging from $83 to $263 per acre-foot. This is particularly true when considering the additional hydroelectric power and benefits from reduced salinity resulting from the increased runoff.

Thank you for the opportunity to comment on the proposed land and resource management plan and draft environmental impact statement.

Sincerely yours,

Vernon E. Valantine

Vernon E. Valantine
Chief Engineer

RESPONSE TO LETTER 012

The 75 percent and 96 percent increases in water yield alluded to in your letter do not represent increases in total water yield from the Forest. T figures represent increases in the amount of induced water yield over the existing levels in the Colorado River Basin.

The apparent discrepancy between the unit benefit values for increased wat yield is due to the different discount factors used in the tables. The $5 figure in the DEIS represents the unit benefit value in 1982 dollars while $42 figure in Appendix B represents the same value expressed in 1978 dolla This unit benefit value was derived in our Washington Office and represent average value of increased water yield in the Colorado River Basin and Gre Basin once the costs of storage, transmission and related facilities are subtracted from the market values. The values used in this analysis may h been low compared with the local market values. Due to time constraints, did not perform a local market value analysis but opted to use the previous determined basin-wide values. We feel that due to the low potential for inducing additional water yield on this Forest, an increase in the unit ben value for induced water yield would not have had a significant impact on th Forest-wide economic analyses.

FREMONT RIVER SCD

COMMENTS
on
Dixie Forest Land & Resource Management Plan

1. The SCD feels that Off-Road Vehicle use should be curtailed in sensative areas to prevent soil erosion and forage resource damage.

2. The SCD feels that further efforts to complete joint Forest & DWR wildlife hunting unit plans in order to define acceptable parameters for managing wildlife in an acceptable balance with other resource concerns be pursued.

3. The SCD feels that fire either naturally occuring or from controlled burns be used as a management tool to improve the resources of the forest both timber and forage.

4. The SCD supports the plan to increase trail and trail head maintenance.

5. The SCD feels that local Human Resource Units whose economics are dependent on forest resource use be given priority in land and resource management over transitory resource use such as recreation.

6. The SCD feels that the proposed land and resource management plan's effort to identify and quantify instream water flows not interfere with resource conservation projects sponsored by the SCD.

7. The SCD feels that the proposed plan support the continued use of herbicides applied to noxious weeds and poisonous plants.

RESPONSE TO LETTER 013

The Forest Plan proposes to close and restrict areas to ORV use to avoid conflicts with other uses and minimize surface disturbance.

This cooperative planning effort is continuing.

Forest Service policy calls for suppression of all wildfires with a "least cost" suppression strategy. Part of the reason for this policy lies in our intent to pursue claims for damages on man-caused fires. It would be difficult for the Forest Service to putsue a claim if we intentionally let the fire grow to a larger size.

However, we are pursuing a prescribed fire policy which allows us to use fire as a management tool when it best meets resource objectives. This policy is described in the Dixie's Forest Plan.

The Forest's program of securing minimum instream flow needs should not conflict with the operation of any existing water diversion or transmission facilitied on National Forest land. Changes in points of diversion for existing facilities and new diversions will be considered on a case by case basis. These proposals will need to allow for the identified National Forest instream flow requirements if they involve enlarging the extent of dewatered or reduced flow in surface waters (e.g., moving points of diversion further upstream, constructing diversions on previous unimpacted streams, or significantly increasing the volume of diversion at existing facilities.

GEORGE B. FRY
Consulting Forester
143 South 100 West
St. George, Utah 84770

Forest Supervisor
Dixie National Forest
Box 580
Cedar City, Utah 84720

Dear John

I would like to make the following suggestions and comments on the Draft Environmental Impact Statement and Proposed Forest Land and Resource Management Plan, for the Dixie National Forest.

First The Environmental Impact Statement Chapter II

1- The method of arriving at values, benefits and costs, displayed frequently in various tables should be changed. For example, all of the costs related to timber sales are assigned to timber management. Many of the costs in timber sale preparation are due to demands of other resources or activities, yet the entire cost is absorbed by Timber Management. Many of the benefits that accrue through Timber Management are credited to other resources.

Most of the "non-cash" benefits are subjective and seem to be tilted in favor of resources other than timber. This is the case in all alternatives. My concern with this is not how one resource ranks with another, but in how the displays will be used in the future as attempts are made to cast Timber Management in a negative light and demands are made to eliminate future investments in Timber Management. It is obvious that the "Sales Below Cost" issue is going to be a real struggle, and the values and costs if displayed in the final EIS, will be used to reduce or eliminate funding for Timber Management.

2- Allowable Sale Quanity, for timber should be reviewed. Using commercial forest acres and a minimum production rate of 20 cubic feet per acre per year and a conversion factor of 5 there should be a production of 32MM per year. Add to this the reduction of old growth, and the back log over the past 9 years of 12MM per year or 108MM, sale quanity for the first decade could be 35MM per year. Only two alternatives, G and H, approach this level.

Second Environmental Impact Statement Chapter III

1- The definition of potential yieldis unclear and needs to be improved.

2- Some inconsistancy exists in discussing the importance of mistletoe and limb rust in ponderosa pine. Under Problem Situations Affecting Timber Harvest, the pests are referred to as existing in scattered pockets, while under Forest and Rangeland Pest Management, mistletoe is shown as existing in 40% of ponderosa stands. Limb rust exists in most ou the ponderosa stands on the Dixie.

3- The discussion on increasing the number of prairie dogs is silent on the effect on other resources.

4- Constant referance is made to "inability to regenereate an area within 5 years" rather than a satisfactory plan developed within

RESPONSE TO LETTER 014

1) Mitigation costs, including specialist review, that are necessitated by timber harvest are charged to timber. The Forest feels this is proper and these costs do represent a very small percentage of the total costs. Improvement costs for resources other than timber are not included as timber costs. Timber industry can make an important contribution by reviewing individual sales and pointing out unnecessary mitigating requirements should they occur. These mitigation measures should only be imposed to ensure that unacceptable resource damage or effects do not occur during the course of harvesting activities.

Many of the benefits that accrue through timber management cannot be valued in monetary terms or easily separated. It is felt that these benefits have been adequately stated.

The Forest is required to display economic information and to use RPA (Resource Planning Act) values as presented in the Draft Environmental Impact Statement. The "cash flow analysis" presented in the document clearly displays all wildlife and most recreation benefits are non-cash and that wildlife makes no contribution to receipts. Also, clearly displayed, is the fact that timber is the highest cash contributor. References will be made in the document to the limitations of using economic comparisons between resources.

2) Your projection of an allowable sale quantity of 35MM per year is not supported by data on hand. It is also unclear what land base you have used in your calculation and if constraints needed to protect other resources and the minimum requirements of law were considered. There is an undoubted need for better inventory data on the timber resource of the Forest. The commitment to obtain necessary data is stated in the monitoring section of the Proposed Forest Plan. Presently the Forest is in the second year of an accelerated stage II inventory. It is questionable that this will bring about a change in estimates for the first decade which are based on site specific information. Additionally, under the proposed Plan, the Forest is striving for fairly high levels of timber stand improvement that should greatly benefit future timber supplies. Thus, the Forest does not feel that we are foregoing many opportunities that would reduce future volumes. Better information may, as you suggest, change future projections. The increased certainty about the future will assist both the Forest Service and timber industry in long range planning. As future projections change, the Forest as identified in the Forest Planning process will evaluate the need for Forest Plan revision or ammendment. Ammendments may be significant or non-significant.

five years of harvest to regenerate the cutover area.

Third, Environmental Impact Statement General.

1- Several references to Research Natural Areas indicate these are already existing. None exist at the present time. The suggestion to increase the proposed number is silent on the effects on other activities.

2- Neither in Wildlife Management nor Forest and Rangeland Pest Management is the question raised concerning control of pocket gopher or porcupine. Both of these animals have had and are having an affect on quanity and quality of timber production.

Fourth Forest Management Plan.

1- The use of wildlife species, (Management Indicator Species) as a thermometer for success or failure of management is questionable. Some of the species seceleted for the Dixie are even more questionable. Wild Turkey as an indicator for several vegetative types, is an introduced species, periodic transplants are necessary to maintain minimum numbers. How could their population indicate management effectivness?
Goshawk if data concerning the population of this bird are lacking, how could population trend indicate anything?
Yellowbreasted Chat so little is known about this species on the Dixie that its' value as an indicator of anything is questionable.

2- A statement that timber is currently managed intensively is misleading, when loss to insect and disease is about equal to harvest, and growth rates are a fraction of their potential.

3- The plan mentions growth in population and economy of the regional marketing area for sawtimber, this indicates some confusion as to the market for lumber produced from Dixie sawlogs. A very small percent of the lumber produced locally, is marketed in the Intermountain Area.

4- Issue 4 of the plan refers to "continuation of timber harvest levels that will treat those overmature stands susceptible to insect attack where it is cost efficent." This issue coupled with the negative value shown for timber management in the Draft EIS could set a trap for future management.

I am in favor of Alternative B, modified to accommodate the timber harvest levels of Alternative G. This would be a move toward intensive management.

Yours truly,
George B. Fr
St. George, Utah

Three research natural areas are proposed and the intention is to finalize the in the next couple of years. They will have minimal effects on other resources.

Statement added in Forest and Rangeland Pest Management Page III-53. "Pocket gophers and porcupines are animals of some significance affecting the timber resource. Pocket gophers have caused mortality to regeneration, especially where located near meadows or other natural openings. Damage caused by porcupines is severe in some stands. The porcupine's feeding activities can cause mortality by girdling the tree and affect tree quality. Damage most frequently occurs in pine and aspen stands. Smaller trees are most susceptibl to porcupine caused mortality".

The Management Indicator Species concept is a scientifically valid method of assessing effects of Forest management. It was adopted by the panel of scientists charged with designing procedures for implementation of NFMA.

The wild turkey is being used as an MIS because of its requirement for old growth ponderosa pine as roosting trees. It is true that turkey populations experience drastic population fluctuations. The Monitoring and Evaluation Program for the wild turkey in the final plan will be modified to separate natural population fluctuations and fluctuations resulting from our management practices.

The criteriod of having masses of population data was not used in selection of Management Indicator Species (MIS). They were selected, for the most part, because they have relatively specific requirements for some habitat factor tha is likely to be affected by Forest management. In order to effectively use these specied as management indicators, we will have to collect baseline data on the species. Some species, such as deer and elk were selected as MIS because of their high economic value. Because of the wide habitat preferences of these species they are not reliable indicators of degradation of one particular habitat component.

A) The statement regarding intensive management will be modified as follows: Timber in the Standard LUC is managed with moderate to fairly intensive practices to the extent that these management practices are compatible wit other resource values and funding levels.

B) The Forest's representation of the marketing area served by local lumber suppliers may, in fact, be misleading. References will be worded to reflect Southwest markets and areas as far east as Pennsylvania. References should be made in Plan page II-34 DEIS page III-31, and DEIS summary.

C) The reference made to treating timber stands will be better reworded to state "continuation of timber harvest levels that will treat those overmature stands susceptible to insect attack where it meets overall Forest goals and objectives. This will be done in the most cost efficient manner practicable".

Cost efficiency does not imply a positive present net value. What it does imply is meeting goals and objectives in a least cost manner. Thus, there is no trap for future management where prudent management practices are implemented.

Reworded as follows: (P III-28)

> Potential Annual yield. The average annual amount of commercial timber that could be harvested during the ten year planning period and that could be sustained in perpetuity under a specific intensity of management.

The discussion of III-28 will be clarified so that discussion on page III-53 will not appear inconsistent. Reworded second to last paragraph on III-28 to state:

> . . . dwarf mistletoe in Douglas-fir is an important disease problem occurring most seriously on the Powell Ranger District. Dwarf mistletoe and limbrust occur in pockets of ponderosa pine scattered throughout the Forest. Recent surveys indicate that about 40% of all ponderosa pine stands on the Forest are infected with dwarf mistletoe.

As a Federally classified species, the Utah Prairie Dog is managed according to a Recovery Plan which specifies, among other things, population goals for the Dixie, this amounts to 100 days at each of 11 approved transplant sites. A Utah Prairie Dog population of this size, or even double this size will have little or no effect on other resources of the Forest, considering the dispersion of the transplant sites.

A "satisfactory plan within five years of harvest to regenerate the cutover area" is not, in fact, the proper expression. Forest Service Regulations CFR 219.27(C3) and the Forest Service Manual states that "...the technology and knowledge exists to adequately restock the lands within five years after final harvest". Monitoring requirements regarding reforestation were modified to reflect that this requirement is not an absolute, rather a desired condition.

CANYONLANDS SOIL CONSERVATION DISTRICT

Comments on

Dixie Forest Proposed Management Plan

. The SCD feels that the Dixie National Forest not expand present campgrounds if such expansions will compete with private sector campgrounds.

2. The SCD supports the Forest Service's efforts to provide for large group recreation campgrounds and to control large groups using other than these developed areas.

3. The SCD Supports the Dixie Forest plan to increase the maintenance of trails and trail head areas.

4. The SCD feels that the traditional economies of those publics whose livelihoods depend on forest resources not be pre-empted for uses of a more transitory nature such as recreation.

5. The SCD feels that Off-Road Vehicle use on sensitive areas should be curtailed.

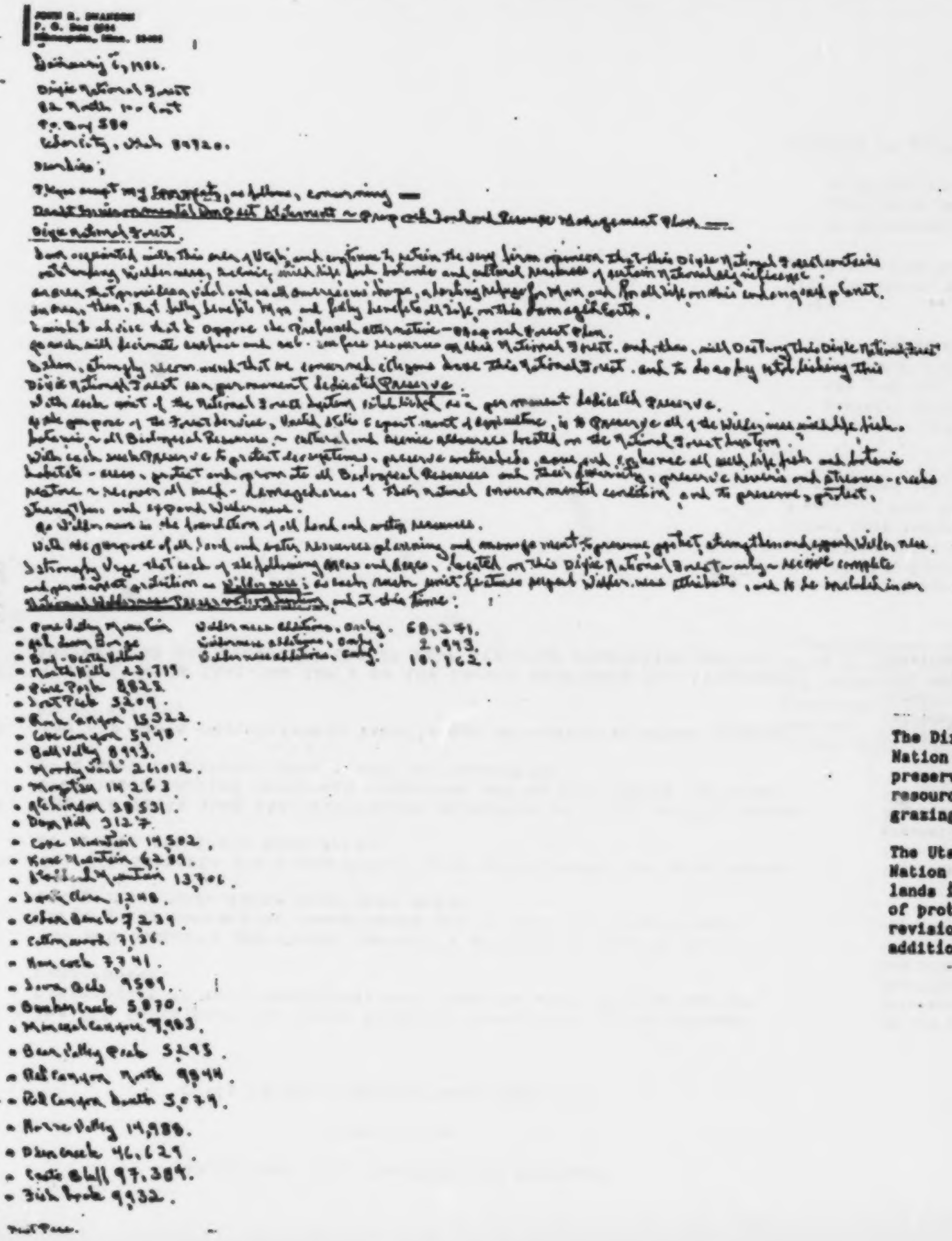
5. The SCD feels that the AUM's on the forest available for livestock increase 5% per decade of the 50 year planning projection period.

RESPONSE TO LETTER 015

We are presently working with the Five County Association of Government to determine the recreation needs in this area and who will be responsible for providing for those needs. We are doing this to ensure that we are not competing with the private sector or other public agencies. The forest also maintains a lower standard campground which will not provide the same opportunities as the private sector.

The Forest is presently preparing an Off Road Vehicle Appendix that will be used to determine the travel needs on the Forest and over those areas that are presently being overused. Once the plan is developed and approved, over used areas that need to be closed to off road vehicles will be closed or restricted and managed to preserve the sensitivity of the area.

All allotments on the Forest have management plans and range analysis. These documents show that grazing capacity of 115M AUMs will result in stable range conditions in the long term. As one area is improved in condition, additional AUMs may be allowed in that area, but this would be offset by decreases in our area that was still in need of improvement.



JOHN R. SWANSON
P. O. Box [illegible]
[illegible]

January 6, 1986.

Dixie National Forest
82 North 100 East
P.O. Box 580
Cedar City, Utah 84720.

Dear Sirs;

Please accept my comments, as follows, concerning —
Draft Environmental Impact Statement ~ Proposed Land and Resource Management Plan —
Dixie National Forest.

I am acquainted with this area of Utah, and continue to retain the very firm opinion that this Dixie National Forest contains outstanding Wilderness, scenic, wildlife, fish, botanic and cultural treasures of certain National significance. An area that provides a vital and [illegible] refuge for Man and for all life on this endangered planet. An area, then, that fully benefits Man and fully benefits all life, on this [illegible] Earth.

I wish to advise that I oppose the Preferred Alternative — Proposed Forest Plan. [illegible] will decimate surface and sub-surface resources on this National Forest. And, thus, will destroy this Dixie National Forest. [illegible], strongly recommend that we concerned citizens save this National Forest, and to do so by establishing this Dixie National Forest as a permanent dedicated Preserve.

With each unit of the National Forest System established as a permanent dedicated Preserve.

As the purpose of the Forest Service, United States Department of Agriculture, is to Preserve all of the Wilderness, wildlife, fish, botanic, and all Biological Resources — cultural and scenic resources located on the National Forest System.

With each such Preserve to protect ecosystems, preserve watersheds, [illegible] all such wildlife, fish and botanic habitats - areas, protect and [illegible] all Biological Resources and their diversity, preserve rivers and streams - creeks, restore - reclaim all such - [illegible] to their natural environmental condition, and to preserve, protect, strengthen and expand Wilderness.

As Wilderness is the foundation of all land and water resources.

With the purpose of all land and water resources planning and management to preserve, protect, strengthen and expand Wilderness.

I strongly urge that each of the following Areas and [illegible], located on this Dixie National Forest, only receive complete and permanent protection as Wilderness; as each such unit features superb Wilderness attributes, and to be included in our National Wilderness Preservation System, and at this time:

- Pine Valley Mountain Wilderness additions, only. 68,271.
- Ashdown Gorge Wilderness additions, only. 2,993.
- Box-Death Hollow Wilderness additions, only. 10,162.
- North Hills 23,719.
- Pine Park 8823.
- [illegible] Peak 3209.
- [illegible] Canyon 15,322.
- Long Canyon 5998.
- Bull Valley 8993.
- Moody Wash 26,012.
- Magotsu 14,263.
- [illegible] 38,531.
- [illegible] Hill 3127.
- Cove Mountain 19,502.
- [illegible] Mountain 6289.
- Stoddard Mountain 13,706.
- [illegible] 1,248.
- [illegible] Bench 7,239.
- Cottonwood 7,136.
- Hancock 7,741.
- [illegible] 9,509.
- Bunker Creek 5,870.
- Mineral Canyon 9,983.
- Bear Valley Peak 5,293.
- Red Canyon North 9,844.
- Red Canyon South 5,079.
- Horse Valley 14,988.
- Deer Creek 46,629.
- Castle Bluff 97,384.
- [illegible] 9,932.

Next Page.

RESPONSE TO LETTER 016

The Dixie National Forest was established to provide multiple use for the Nation not a single use such as a National Preserve. In the Forest Plan we wil preserve wilderness, scenic values, wildlife, fish, botenic, and cultural resources. The Forest also has the responsibility to manage the uses of grazing, timber; developed recreation, minerals, and other uses.

The Utah Wilderness Act of 1984 designated 3 Wilderness areas on the Dixie Nation Forest. The Utah Wilderness Act states that roadless and undeveloped lands in the National Forest system in Utah need not be managed for the purpos of protection their suitability for wilderness designation prior to or during revision of the initial land management plan. This plan does not recommend additional areas for Wilderness designation during the 10 year planning period

JOHN R. SWANSON
P. O. Box [illegible]
Minneapolis, Minn. [illegible]

Page Two.

- Table Cliffs 21,917.
- Jake Hollow 4813
- Hog Ranch 11,323.
- [illegible] 7471.
- [illegible] Horse Bench 11,003.
- Shakespeare Point 1320.
- South Rim 1926.
- Steep Creek 48,723.
- Happy Valley 10,097.
- Boulder Mountain 53,072.
- Hay Lakes 13,229.
- Dark Valley 12,882.
- Capitol Reef 1912.

Plus, an additional 172,000 acres.

To secure a total of some 940,000 acres of Wilderness to be located on this Dixie National Forest — only —; and to be included in our National Wilderness Preservation System, and at this time.

To include rivers and streams - creeks in our National Wild and Scenic Rivers System.

To save all life on this National Forest, including; Utah Prairie Dog, Bald Eagle, Peregrine Falcon, [illegible] National Forest, Mountain lion and [illegible] [illegible] [illegible].

To establish this National Forest as a National Wildlife - Biological Preserve - National Critical Habitat Area, and to establish, then, this Dixie National Forest as a permanent dedicated National Wilderness Wildlife - Biological Preserve.

Also, to select the following as this National Forest's permanent planning and management alternative: Full Wilderness Preservation Wilderness Wildlife - Biological Service Resources.

I oppose the leasing - development of carbon dioxide gas in this area; as such would destroy landscapes and air resources. [illegible] with oil - gas development to also [illegible] this National Forest, and could destroy water resources in this general area.

And to remove all [illegible] - roads so as to return forest area to a necessary Natural Environment.

With an elimination of logging activities as [illegible] [illegible] resources.

To permanently ban all forms of surface and sub-surface activities - developments on all current, proposed and potential wilderness.

With no release of any Roadless Areas.

To acquire all [illegible] holdings on all Public Lands.

With no disposal of any Public Lands.

In wilderness save our natural lands and waters;

and save America!

Sincerely,

John R. Swanson.

Commercially developable minerals under the Dixie NF are considered a legitimate resource of the Forest having potential for development, similar to other NF resources.

Congress in passing the Utah Wilderness Act of 1984 declared its intent that the three Wilderness it designated on Dixie NF be withdrawn from further location of mining claims and mineral leasing. However, the existing mineral rights in the Wilderness are to be honored. Buffer zones around the Wilderness are prohibited. All remaining NFS lands are released to multiple use management as is to be determined through the Land Use Management Plan. Minerals prospecting exploration and development is allowed on all areas outside the Wilderness unless specifically prohibited by other laws regulation or policy. Protective stipulations are built into the permitting leasing documents where mineral activity occurs.

Presence of carbon dioxide (CO_2) gas in the Escalante Anticlive area has been determined, and a large resource is suspected. The CO_2 was discovered on the drilling of existing oil and gas leases; The lessee has the right to explore and develop either oil or gas within the lease boundaries, and has declared his intent to do so. The Congress in designating the Box-Death Hollo Wilderness specifically established exclusion areas within the Wilderness to allow development and production of CO_2. Presently, the Forest Service is acting on a proposal by the BLM to issue competitive bid leases on a 80,010 acre tract determined likely to contain CO_2 and possibly oil. This area is called the Escalante Known Geologic Structure (KGS) and involves the Escalante Anticline.

554 Cedarwood Terrace
Cedar City, Utah 84720
January 15, 1986

Dixie National Forest
Attn: Forest Planner
82 N. 100 E.
Cedar City, Ut. 84720

Gentlemen:

This is in reply to Forest Supervisor Lupis' letter of October 4, 1985 which transmitted a DEIS and proposed Forest Land & Resource Management Plan for the Dixie National Forest.

I am well aware of the massive amount of time and effort that was needed to produce the draft documents. I commend the Forest Planning Team, and especially retired Forest Planner Al Schldt, for their diligence and very hard work on this effort. I am also aware of the ONEROUS analysis and display requirements dictated by impractical political appointees at the Department level in Wash., D.C. It is unfortunate that the planning process and the documents had to be burdened with economic data that is of little or no use to local decision-makers and land managers.

The following comments are offered for your consideration:

1. Overall, the selected alternative is a proper and reasonable choice when compared to the

other alternatives that were evaluated.	
2. At the top of page IV-1 is an outline of Chapter IV. Items C & D are reversed from the order they appear in the text on pages IV-16 and IV-18.	Items C and D on page 1 have been corrected.
3. Section D starting on page IV-18 is titled "Desired Future Condition of the Forest". Each of the Management Area writeups in Section F starting on page IV-58 has a section titled "Desired Future Condition". Most of these statements are not written as desires at all, but rather are written as predictions of what will happen. They should be rewritten, or the titles of the sections changed to reflect what the statements really say.	There is a fine line between the way "desired future conditions" is used and predictions of what happen. We hope that our wording will not prove to be confusing to the reader.
4. Management Area 2B applies to a wide variety of travel corridor situations across the Forest. I suggest that U-18 across the Pine Valley District should be a 2B Management Area.	Agree - U-18 changed to 2B designation.
Red Canyon on the Powell District is a very special place on the Dixie National Forest. It needs special protective management beyond what the 2B management direction appears to be. For example: the U-12 corridor through Red Canyon has historically had no timber harvesting and no firewood cutting. These restrictions should continue. The management direction for 2B should be revised to allow for exceptions such as Red Canyon.	The Red Canyon area has long been recognized for its visual quality, and as you pointed out, has been managed to protect that quality and the Forest will continue to preserve it through the visual management system. Management activities that are permitted in Red Canyon will be the type that will enhance the visual quality of the area.
5. Near the bottom of page IV-19, it is stated "The U-14 Highway and Boulder Grover Road will be	

managed to protect their scenic qualities". This statement is much too narrow. All of the 2B areas should be managed to protect scenic qualities.	Agree - the specific reference to U-14 and Boulder-Grover Road has been dropped.
6. Management Area 9B occurs only on the Teasdale District in the proposed plan. This seems strange indeed! Most of the Teasdale District streams should probably be in 9A, and 9B should have limited local application forest wide.	Serious errors were detected in the mapping of riparian management areas (Prescriptions 9A and 9B) in the draft Land and Resource Management Plan. These errors have been corrected in the final LRMP.
7. I note that the proposed plan places most of forested areas on the Boulder Top in Management Area 7A - Timber Management. Historically, the Boulder Top has had special restrictive management that allowed harvesting of only dead and dying trees. As I read the proposed plan, management on the Boulder Top would be drastically changed. I can find no discussion of this proposed drastic change in the planning documents. I suggest that the forested areas on the Boulder Top should be in a unique management area that will provide for continuation of current management direction for the area.	The "Boulder Top" does not have a separate management area designation, however, special management precautions must be taken when harvesting timber there, as well as other high elevation spruce. Caveats have been inserted in the Forest Standards and guidelines and Monitoring Plan, drawing special attention to these areas.
8. Management Unit 1A is written to cover developed sites and proposed developed sites. Management Direction is properly restrictive to protect developed site recreation values. Around Navajo Lake, there are many acres outside of developed or potential developed sites included in 1A in the proposed plan. As I read the management direction	Management prescription 1A provides under its standards and guidelines for the management of tree stands to enhance visual quality and recreation opportunities on existing and proposed recreational sites, and for the removal of unsafe or dead trees in developed sites and planting new trees to provide desired tree cover.

for 1A, there would be no way to properly manage the forested hillside above Navajo Lake to maintain a healthy forest cover. These kinds of areas should be in a separate management area, or 1A should be revised to cover the management of these areas that are adjacent to but outside developed sites.

9. The writeup for Management Area 4D indicates that 4D "might occur" on Webster Flat and in the Mt. Dutton area. The map for the proposed plan shows no 4D in either location. If 4D is not going to be used, it should not be included in Chapter IV of the plan.

Again, congratulations to the Dixie team for ompletion of the draft phases of a terribly omplex and difficult planning process.

Sincerely,

Ed Fournier

Prescription 4D was applied in the proposed plan on the Teasdale District, r on Webster Flat or Mount Dutton. The example will be deleted.

RESPONSE TO LETTER 018

1206 Michigan Avenue
Ames, Iowa 50010
January 10, 1986

Dear Alden:

I was sorry to hear about that fire and I hope all is well now.

Thanks for mailing copies of the three planning documents to me in Iowa. I enjoy reading what your gang writes about DNF, even when I am in strong dissent. I have scanned all three documents, perhaps not always with understanding. Since you know my prejudices the enclosed two-part commentary will hold no surprises. I hope you will press for some restriction on the Hancock Peak Sale, a topic on which I have exercised myself in part II.

Since the demise of the Iron County Record we do not keep up with current events in Cedar City. But I hope you are still there to receive and file your publics' comments!

Best Wishes

I. Errata, Anomalies, Comments

1. Brain Head? (p. BII-40) The currently popular local appellation is "Brain Dead".

2. Table II-1 (LMP p. II-2,3)

(a) "Capacity-Private": what about those last 3 MRVD figures?

(b) "Timber Sales Demand Trend": is that "50" correct?

3. Ages in the Forest (LMP II-29) Does this table make sense? If I adjoin a first column to your table (using data from the 75-85 TMP, p.22) I get

(in acres)	Past Forest ('75) ("com. reg'd")	Present Forest ('85) "suitable"	Future Forest ('30 "suitable"
0-20	17,293	9680	29,039
21-60	51,882	0	38,719
61-80	73,266	125,834	0
81-100	110,384	164,522	0
100+	324,092	0	2,323,008
	-10years-	-45 years-	

(a) There are some incredible transitions here! And that last figure is more than all of DNF.

(b) On p. II-26 it reads 319,000 acres suitable, whereas column 2 above adds up to 300,036.

4. The oft repeated PNV tables.

(a) It would be helpful to consistently include the terms "average annual" or "periodic" where applicable in some of the tables where they are missing.

(b) According to my computer you use 1985 for the 50-year PNV's but don't indicate it.

(c) Table II-r has 222,482 in Totall Benefits Period 2,- but it is correct later (e.g. II-12C).

5. References off. LMP p.IV-57

6. Definition of "1" Is MA 1 same as 10E? (B-II-51) I have not found a definition in the documents.

7. Allowable Sale Quantities Why are they the same in Alternatives A and B?

The Forest has no way of predicting what private industry is going to do in the future; therefore, the capacity for the private sector stayed the same during the last three periods. This may change depending on the demand and what the private sector wants to do.

Table II-1 on page II-3 is completely incorrect for timber. It should read 55 MMBF over time. This is equivalent to the maximum operating capacity of all manufacturer's dependant on Dixie National Forest timber. Demand is a price-quantity relationship, quantity demanded is a more correct statement. It is fair to assume that at reasonable prices, local sawmills would be operating at maximum efficiency (full capacity) and could find markets for all timber provided. The two largest producers on the Dixie (50 MMBF capacity) have national markets for their products and are not dependant on local demand. All else aside it would be reasonable to assume that there will be a demand for Dixie National Forest softwood sawtimber in excess of supply. No alternative supplies anywhere near 55 MMBF on an annual basis. The current demand for aspen is significantly below potential yield. Nationally, the demand for aspen is increasing with improved utilization techniques for which there is a similar opportunity on the Dixie.

Your comments compelled us to review all figures on Table II-25, page II-29. Results produce minor changes in the "Present Forest" column and in the "Future Forest" column. The table will appear as follows:

Age Class Distribution Acres	Age Class	Present Forest	Future Forest (2030
	0-20	6473	28739
	21-60	174	37366
	61-80	129857	174
	81-100	161410	0
	100+	2152	233767
		300066	300066

There are some significant changes between the 1975 figures and "present Forest" figures taken from the most recent timber inventory (1979). The Forest recognizes the accuracy of the recent inventory over that used for the TM Plan. Some explanations are offered as to the differences, however. The disappearance of the 21-60 age class in the "Present Forest" could represent ingrowth into the 61-80 age class. Most of this was probably ponderosa pine that seeded in during the bumper year of 1919. Thirty thousand acres of 65-70 year old pine can be found on Uinta Flat alone. There are several other plausible explanations for the differences in the 0-20 and 100+ age classes:

1) Acres included in commercial forest land in the 1975 TM Plan that were not identified as suitable in the current planning effort (277,000 acres). Much of this land would occur in the 100+ age class and has never been commercially harvested.

2) The method used to determine stand age could differ. Overstory age vs. average tree age used in the recent planning effort. The latter method would typically lower the average age of the stand.

3) Further averaging of age classes for Forest Planning would cause some difference.

4) Different stratification and inventory methods between the two inventories. The 1979 inventory used for the recent planning effort was subject to more structured and rigorous standards than other previous Forest inventories.

Without comparing the disposition of each acre under both inventories, these explanations must be accepted. Such an effort would probably not be very productive.

The Forest does recognize the need to conduct an inventory that is more compatible with the needs of future Forest planning. An accelerated stand examination is underway that will provide better site specific information.

Item 10 on page II-26 should read 300.1 thousand instead of 319.0 thousand.

Page II-26 "Future Forest", 100+ age group adds up to more acres than total acreage of Dixie National Forest.

On Page II-26, "Future Forest", 100+ age group an additional 0 was inserted. Number will have been 232,008 but is amended as previously mentioned to 215,400.

Inclusion of terms average "annual" or "periodic" on output, cost, and benefit tables.

Your suggestion is well taken; Tables II-1, II-2, II-3, II-4, II-5, II-5(5), II-9, II-10, II-11, II-12, II-13, II-14, II-15, II-16, II-19 of the DEIS and tables BIII-1, BIII-2, BIII-3, BIII-4, BIII-5, BIII-6, BIII-7, BVI-2, BVI-3, BVI-4, BVI-5, BVI6, BVI-7, BVI-8, BVI-9, BVII-1 should have the following included in the heading or as a footnote:

> "Outputs, Activities, and Dollar Amounts are Average Annual. Dollar Amounts are in 1978 Dollars Inflated to 1/1/82/".

All figures displayed are in constant, first quarter, 1982 dollars, unless explicitly noted. Where 1/1/82 dollars are not stated, tables will be corrected to display this. (Tables II-24 and IV-29 of the DEIS in addition to those listed above).

The table on Page II-7r, DEIS displays 222,482 for "Period 2 Total Benefits" it should be 22,482 as you correctly state.

The page references on IV-57 will be corrected.

Management Area 10B is mislabelled as 10E on page IV-158 of the Plan and DEIS, page BII-51. (Prescription 10B refers to municipal watersheds.)

It was the intention of the Forest to reflect the harvest level of the Current Program (A) in the Composite Alternative (B). Emphasis on resources other than timber in Alternative B make it a unique alternative that attempts to resolve divergent issues.

8. Highway Designations There are new numbers on CC District.

9. Economy Why is money being spent on the Brian Head Peak road?

10. Bleak Budget Outlook Isn't Alternative C the realistic one now?

11.Regeneration and Grazing The way I've seen livestock wandering through some plantings it's a wonder anything survives. Andwhat can you do in aspen stands that continue to be trampled like the one in this snapshot (NE of Hancock)?Have you ever been to Singletree Campground where the campers are in a zoo with the cattle looking on?

12.V.Q.O. The VQO columns on p. II-53-b are expressed in M-acres which masks some critical differences between Alts. A and B in Decade 1. (See my Part II below). And where does Alt. B lose 60 M-acres of Retention in Period 5 (838 to 778)?

13. Overlays The 105 AA's (p. BII-4) are hard to correlate with personal knowledge of the areas because not accompanied by overlay on the MA map. I am spoiled by the previous forest plans.

14. Meaningless Definitions? (BII-3. C-38) "can" is operationally ineffective. "can and will be " makes more sense. Doesn't the budget outlook suggest that "can and probably won't be" is more honest? The whole regeneration discussion about the data for prognosis does not inspire any confidence in spruce-fir regeneration.

15. Sustain? In that timber goal for Alt. B (p.BIV-6): Could the statement be illegal? Shouldn't you say something like ".....sustain present timber industry subject to legal requirements of sustained yield, good silviculture, diversity..."?

On Dec.3, 1975 Merlin Bishop wrote: "The DNF does not subsidize marginal sawmills. The Forest offers for sale timber which can be bought by anyone who wishes to operate a sawmill. Whether or not the sawmill is marginal is a function of the sawmill." I take this to imply that the DNF does not have an obligation to "sustain...".And there is the Sec'y of Agriculture's statement last summer that the...."increasing

The Brian Head Peak RD. No. 30047 is part of the Forest Development System. It provides access to the Brian Head scenic overlook and multi-uses of Hunting, range, recreation and hiking. The road was extremely rough and approaching an unsafe travel condition.

The emphasis of alternative C is to maintain the same relative combination of resource activities as currently underway, but with a 25% reduction in costs. Our preferred alternative has a different mix of resource activities which would provide a different emphasis if funding were reduced say be 25%, and would not resemble Alternative C, although the total cost would be similar.

Timber plantations are fenced to keep livestock from trampling and eating the seedlings if this is a potential problem in the plantation area. We usually solve this problem by putting plantations in areas not likely to be frequented by livestock.

The acres reported were not the final acres arrived at for the composite alternative. They should have been 849, 814, 796, 786, and 777. These numbers still drop down to the same level but do not take the large drop in the 5th period.

The statement regarding the ability to regenerate trees after harvest merely paraphrases Forest Service Regulations. Operationally, the Forest views the statement "can and will regenerate" as the desired objective. Certain exceptions may occur because of failure of nursery stock or other unforeseen circumstances that could prolong the time between final harvest and seedling establishment.

Spruce regeneration, discussion about prognosis data - It is believed that the discussion you refer to simply states that the spruce-fir type will be managed in accordance with site factors the same as any other species. The most recent plantation survival data for third year spruce is around 85%.

Alternative B is based on the assumption that good silviculture will be practiced and legal requirements will be met. The statement that present timber industry will be sustained during the first decade is not illegal. The Forest Service is mandated to consider community stability as a planning criteria. The statement to which you refer is simply a goal of Alternative B in terms of available raw materials.

The Forest does not intend to subsidize marginal sawmills. Industry is required to do all sale related work required by the Forest Service to ensure environmental requirements are met. This includes bearing the costs for establishing regeneration, fuel hazard reduction, road construction, logging, hauling, milling, mitigation for soil, visual, water, recreation, and wildlife resources, etc. It is the intention of the Forest to require only those measures deemed necessary by interdisciplinary resource specialists and not to unnecessarily burden the timber purchaser. Forest prepares and administers timber sales at no charge to the purchaser. This could be interpreted as a subsidy although its intention is not to keep inefficient operators in business. Benefits that accrue to resources by vegetative manipulation are not displayed on the ledger. It is felt that these benefits outweigh any subsidy.The Forest Service does see the reduction of these administrative costs in the face of declining budgets as a paramount goal.

dependency on submarginal timber sales would seem to result in potentially greater community instability due to uncertainties over continuation of a relatively high level of federal funding to support a timber program with costs greater than revenues." (I assume he refers to cash flows. Incidentally, there is that lack of a minus sign on that cash flow figure on p. III-33.)

16. BF/acre yields On p. BII-97 only one of the old sales seems to yield at least 1500 BF/ac. Thus I get

1248, 926, 1583, 586, 175, 91, 235, 650 resp,

Yet on p. BII-94 there is the statement to the effect that at least 1500 BF/ac is necessary for the local timber operators to turn a minimum profit. More about this in Part II below.

17. S-F Assault I think I understand your concern with the Spruce-Fir . But the planned heavy S-F harvesting at high altitudes and on very steep slopes (AA 13, 31, 71, etc) is disturbing in view of the poor regeneration history and the hardly marginal character. I hope these areas will be treated gently.

18. Acreage Disparities. In LMP p. B16, the cutting areas don't seem to agree with other sources of the same information. For example, the Bunker Creek Sale reads 600 acres, But the final sale plan (see Figure D) seems to have about 370 acres in the cutting areas. Both sales are for 2.5 MMBF. And in the 75-85 TMP the same sale is for 1000 acres at 4 MMBF. (I have a similar problem with the Hancock Peak Sale in Part II below.)

The discrepancies are of interest because the B.C Sale area is in an inventoried roadless area (and the H.P. Sale intersects an inventoried roadless area), Both areas have primitive trails used by locals. In each case one hopes that logging activity will be carried out with sensitivity to the recreation and esthetic appeal of the areas.

The statement you refer to was made in response to (Agriculture Secretary. statement regarding submarginal timber sales) the expansion of a sale program. The Dixie seeks to maintain its present sale offerings, at least through the next ten years. With declining budgets expected during this period, the Forest will need to increase its administrative efficiency in order to maintain our planned timber offerings.

Minus sign on cash flow figure on Page III-33 is missing and will be corrected.

Your volume calculations refer to the adjustment of yield tables to represent recent harvests and adjustments to the 1979 inventory. These figures represent total cut volume spread over the total acres of the analysis area. These are not actual volume/acre harvests modeled by FORPLAN. They are merely adjustments made to reflect harvests between the 1979 inventory and 1984.

Management of the spruce-fir type, of course, will be undertaken with great care. Careful planning and monitoring must ensure that appropriate laws are followed and prudent resource management is used. It is hoped that timber management will minimize the assault by forest pests such as the spruce beetle (reference DEIS, Page III-53). Planned harvest levels in the spruce type are not viewed as an assault. AA-13 and AA-71 are considered the most productive of the Forest's spruce sites and not marginal. Higher costs were considered for regeneration of any land determined to have regeneration problems.

There is an error on page B-16, as you have indicated, for the Delong Flat (i.e., Bunker Creek) Timber Sale. The actual area to be cut over is 346 acres. This change will be made in the final Land and Resource Management Plan.

When the Delong Flat (Bunker Creek) Timber Sale was included in the Timber Management Plan (1975 - 1985), the area and volume figures were only estimates based on a preliminary reconnaissance. As the area was more thoroughly examined, these figures changed depending on other factors in the area such as visually sensitive areas, wildlife requirements, riparian or wet areas, insect and disease damage, silvicultural needs of the stand, etc. Consequently, there was a difference between the preliminary estimate and the final figure.

Adjacent to trails such as Hancock Peak and the Right Fork of Bunker Creek, management emphasis is placed on protecting the integrity of the area. This does not mean timber management practices are eliminated, but modified so as to retain the visual characteristics of the landscape.

II. The Projected H.P. Timber Sale

I make a special appeal respecting the scheduled H.P. Sale (LMP p. B.16; 1989, 1500 acres, 3 MMBF). I have attached some sketches that I hope will clarify my comments. Thanks to Brunson and Barondeau for the Preliminary Sale and Cut Boundaries.

A. Items

1. Surprise Boundaries. The sale boundary includes H.P. itself. The cut boundary includes the wooded north terminus of the CCC Cairn Trail. This terminus is omitted on the Alt. B map. (See Figure A)

2. "On the Back Burner". On p. 552 of the Markagunt LUP 1977 is Management Decision #3 regarding the inventoried roadless areas 170,171 (See Figure B), namely: "Recommend for study as a special interest geologic area..." If established it "would be classified under 36CFR 294.1 and preserved as nearly as possible in an undisturbed condition."(Merlin Bishop letter, p.127, same LUP) In 1979 Brunson said "action" on this decision was on the "back burner". Since no mention is made in any Alternative, is it now dead?

3. The Cut Acres. Contrary to the 1500 cut acreage listed on p. B16, the preliminary sale map shows about 2580 acres within the cut boundaries. (See Figure C) The intersection of 170 and the cut area contains about 360 acres commercial and 270 marginal, both condition descriptions no doubt too rosy.

4. Submarginal? The 2580 acre cut area is almost all rated commercial and the take is a projected 3 MMBF or 1160 BF/acre . Now, on p. BII-94 I read: "Local timber operators have indicated that average removals of 1500 BF/acre are necessary to operate at a minimum profit at current costs and proces." (Prices and costs are assumed fixed in your documents.) Assuming that you don't include some high yield stands just to "sweeten" a sale, then the H.P. sale appears economically submarginal, i.e. the stands are unsuitable for commercial logging?

5. Harvest Foregone. If logging the portion of 170 in the cut area were foregone, I guess that approximately 420 MBF commercial (using 1160 BF/ac) and 160 MBF marginal (using 600 BF/ac) would be denied. (Since almost all the area in the sale is classified commercial I used the 1160 figure

1. The preliminary sale boundary was laid out to follow the lava/timber edge. The cutting unit boundary follows the toeslope around the base of Hancock Peak. These are preliminary boundaries based on aerial photo interpretation and ground checks. The final boundaries may have some minor changes.

   The cutting unit does include the original terminus of the CCC Cairn Trail. However, it is entirely outside the Hancock Peak Timber Sale boundary.

2. Management Decision #3, which you referred to, applies to Management Unit 3.3 Lava Beds as described in the Markagunt Plateau Land Use Plan.

   The lava bed areas were placed in Management Area 2A - Semi-primitive Recreation. In addition, the Timbered Cinder Cone in sections 28 & 29, T37S, R8W will be designated as a Research Natural Area to emphasize and protect the unique geology and vegetation. No additional geologic studies are planned.

3. As you have indicated, the total area within the cutting unit boundary is approximately 2580 acres. However, within this area there is an estimated 1100 acres of meadows, aspen stands, lava outcrop and other areas in which commercial timber harvesting will not occur. Because of the number and scattered nature of these areas, it is impractical to locate individual cutting unit boundaries. For these reasons, one cutting unit boundary will be established, but not all the area will be harvested.

4. Using the acreage figure developed above and a projected harvest of 3 MMBF, the harvest per acre is 2000 board feet per acre, which is above the 1500 BF per acre which the local Woods Products Industry has indicated is the minimum per acre harvest for a profitable sale.

5. The Hancock Peak Timber Sale will proceed as planned. Prior to placing the area on the Five Year Action Plan, an economic analysis was done which indicated a positive return to the Government. Specific steps will be taken to protect the other resource values of the area.

6. As part of the environmental assessment phase of the Hancock Peak Timber Sale, the Visual Quality Zones, as indicated in the Markagunt Plateau Land Use Plan, were field checked by the forest landscape architect and presale forester. This field check revealed that there is no retention area within the cutting unit boundary and approximately 10 to 15 percent within the partial retention area.

for commercial.) At say $225/MBF, other benefits may offset this.

6. VQO. The 1977 LUP VQO map specified Retention for a good part of the cut area. (See Figure C)

B. Recommendation

1. In Section 32 and the west half of Section 33: no new or reconstructed roads. Affirm no need for additional roaded recreation in view of the surplus now on the Markagunt.

2. Enlarge the north area of the 2A parcel so it includes the 170 roadless area.

3. Affirm that in view of the growing regional recreational development and demands, and the probable economic submarginality of the timber, it isworth keeping the area in an undeveloped state for semi-primitive recreation use.

4. Undertake the promised Special Interest Area study for the whole lava area.

Some of the proposed timber sale does lie within areas that have been inventoried as retention using the visual management system. The definition for retention is that activities may repeat form live, color, and texture which are frequently found in the characteristic landscape. Changes in this qualities of size, amount intensity direction, pattern, etc., should not be evident. This does not prohibit the timber sale but only sets rigid requirements that must be included in the sale administration. Mitigation requirement will state the necessary requirements that must be met during the sale.

The Hancock Peak Timber Sale will construct local standard roads in sections 32 and 33 T36S, R8W. This action will increase the amount of semi-primitive motorized recreation and reduce that in semi-primitive non-motorized.

The 2A boundary in the Hancock Peak vicinity was located to conform with the timber/volcanic edge. No additional roadless area is planned. The roadless areas were evaluated during the Utah Wilderness legislation process, and those areas not designated as wilderness were directed to be managed under the concept of multiple use and sustained yield.

utah power
& LIGHT COMPANY
1407 West North Temple
P O Box 899
Salt Lake City, Utah 84110

RESPONSE TO LETTER 019

January 14, 1986

Dixie National Forest
Attention: Al Schuldt
Forest Planner
82 North 100 East
P. O. Box 580
Cedar City, Utah 84720

SUBJECT: DRAFT E.I.S. AND PROPOSED LAND AND RESOURCE MANAGEMENT PLAN FOR THE DIXIE NATIONAL FOREST

Dear Mr. Schuldt:

Thank you for the opportunity to review and comment on the subject document. My comments are in the area of utility corridors and the voltage of a transmission line.

The document suggests a minimum voltage of 66 kV as the voltage for a transmission line and corridor designation. I would recommend that this voltage be raised to at least 70 kV. Several companies, Utah Power & Light Company included, use 69 kV and below as sub transmission voltage and these lines are typically constructed with single pole wood structures. The double pole structures typically begin with a voltage of 115 kV or 138 kV. These higher voltages are more commonly referred to as transmission lines.

My comment on corridors is directed to the area south and east of Veyo near Diamond Valley. The E.I.S. gives a width of 50 feet (the right of way of the existing line) to a corridor designation. The appendices state the width to be 500 feet with all new facilities to be west of the existing line. The 500 feet is an appropriate width to accommodate additional lines in the area. There is, however, a problem with the requirement that all new facilities be west of the existing line. Just south of the forest boundary, approximately a mile and a half, there is a sandstone mountain on the west side of the existing line and it stands as

The 66-kV voltage reference in the Draft Environmental Impact Statement is in error. Forest Service Washington Office and Forest Service Intermountain Regional Office direction is to consider corridor designation for existing electrical transmission lines 69-kV and above. We will change the narrative to read...69-kV. The 69-kV voltage standard was developed by the Washington Office and Regional Office after consultation with the electrical industry. This standard, along with other utility standards, are included in the Regional Guide for the Intermountain Region, dated January 1984. The Forest was guided by these standards in corridor planning. The designated corridors and windows are located in those areas, where high voltage lines, i.e., 115-kV and above, presently exist; or where future energy developments indicate that high voltage lines could be constructed.

The Diamond Valley corridor width will be established at 500 feet. The Forest is in agreement with Utah Power and Light Company's concern over the constraining terrain feature west of the existing 138-kV transmission line in this corridor. The location restriction will be eliminated from the corridor direction in the Final Land and Resource Management Plan. The wording will read....The width of the Diamond Valley Corridor will be 500 feet, inclusive of the existing 138-kV right-of-way.

a formidable thwart to the construction of any line on the west side of the existing line. I would recommend withdrawing the requirement that holds new facilities to the west side and just leave the corridor designation to 500 feet and parallel to the existing line.

I would also like to suggest that the final plan contain sufficient flexibility to adjust activity restrictions and mitigation and reclamation requirements as experience is gained in what is useful and successfull vs. what is unnecessary or unreasonable.

Thank you again foar this opportunity and for giving our comments consideration.

Very truly yours,

Glen B. Wells, Supervisor
Land Surveys & Right of Way Design

GBW/ka

cc: Rosemary Richardson - 326

The mitigation measures listed in Appendix D, Draft Environmental Impact Statement are those that would mitigate resource impacts mentioned in the analysis and evaluation, i.e., Appendix D, Table C through E, pages D-8 through D-22. These measures will only be applied where specific ground conditions warrant. Additional site-specific measures may also be developed for a particular proposal, if needed. All such measures will be developed as part of analyses and evaluations for actual project proposals.

L. Cordell Peterson
994 North 1725 West
St. George, UT 84770
January 16, 1986

Mr. John V. Lupis
Forest Supervisor
Dixie National Forest
82 North 100 East
Box 580
Cedar City, UT 84720

Dear Mr. Lupis:

Thank you for the opportunity to respond to the Dixie National Forest Proposed Land and Resource Management Plan/Draft Environmental Impact Statement. The Dixie PLRMP was an excellent document. It was the most clear and concise forest plan of all Utah plans reviewed. The individuals responsible for its concise, readability and, most important, understandability should be extremely proud of their accomplishment.

The following comments are submitted for review, evaluation and comment:

a. a. Current Wildlife Habitat/Forage Condition; As with all the forest plans in Utah, neither the PLRMP or DEIS addressed current big game range condition (i.e. summer, transitional, winter range). Range condition summarization is readily available for livestock which implies primary concern forlivestock and a possible secondary concern for competing wildlife. Does the Forest know range condition of big game habitat? If the Forest does know wildlife range condition, a more precise picture of big game habitat condition should be comprehensively addressed in the Final LRMP/EIS.

b. Big Game Summer Range: In a number of areas in southern Utah lack of adequate summer range is the primary factor in the ability to increase or sustain deer herd population levels. The Paunsaugunt Plateau, home of deer herd unit 60A, is one of these areas. Is it possible the continued extremely high timber management program scheduled for this area will result in continued detrimental impact on the Paunsaugunt deer herd. Utah Big Game Range Trend Studies, 1981, UDWR Publication Number 83-1 identified that "Logging has and will continue to exert a strong influence on big game habitat. The effects of clearcutting are particulary dramatic and usually are at least mildly beneficial." In addition to timber logging operation impact, the advanced ecological decline of aspen stands was of serious concern in deer herd rejuvenation.

Since a management need has been specifcally identified, it would seem

We indirectly talk to this, and much information is available in the AMS (Chapter II). A complete assessment of big game range involves more than just the forage resource. A cumulative analysis of present and proposed road densities, proposed modifications to hiding and thermal cover, people activity, livestock management , minerals activity, etc. is needed to adequately assess wildlife habitat condition. Cumulative effects analysis is a branch of wildlife science that is just in its infancy. Proper analysis requires some very sophisticated ecological modeling techniques and the complexity makes use of a computer necessary. An ecological model is only as good as the data that goes into it. Currently the data we have available is just not complete enough to put together an ecological model that could make reliable predictions.

According to Utah Department of Wildlife Resources officials, lack of summer range is not a major concern on the Paunsaugunt. Timber harvest does not appear to have been a problem, although the roads associated with logging have potential of being a disturbing factor once the area is opened to hunting again. Road management, in the form of seasonal or permanent travel restrictions is a high priority on the Forest. Decline of aspen stands is a problem Forest wide. Unfortunately, there is little commercial market for aspen, and cutting to provide stand rejuvenation has to be done by our crews or in association with a conifer timber sale. Application of a wildlife emphasis prescription on selected portions of the Paunsaugunt Plateau are being implemented in the final plans, which will result in some aspen regeneration.

reasonable that corrective action would have been addressed in the PLRMP/DEIS. In this regard, Management Area 4D prescription should have been included in the Paunsaugunt Plateau management philosophy. Alternative B (Proposed Action) map does not indicate such management intent. In addition, why wasn't a Wildlife Habitat Management prescription 4B assigned within the Paunsaugunt area? Hopefully, the Final LRMP/EIS will more adequately address the Paunsaugunt deer management issue.

c. Minimum Viable Population: PLRMP Table II-14 (p. II-18) indicates that old growth timber will be retained at a 10% retention level. Concerned that a 10% old growth retention level is not adequate to maintain habitat necessary to maintain MVP for species dependent on old growth timber. Wildlife experts indicate a 15 to 25 percent of well distributed old growth timber should be maintained to insure ecological diversity (An Environmental Agenda for the Future, Island Press, Wash. D. C., 1985). How did the Forest determine a 10% old growth retention level? The Forest should reconsider the 10% old growth retention level in the Final LRMP/EIS.

Does the 10% old growth retention level figure incorporate productive timber areas as well as unproductive timber sites? If management direction intends a 10% old growth overall retention level based on unproductive timber sites, the 10% objective probably will be met which will mean minimum concern for MVP management on timber productive sites.

The "Present and Future Forest Condition Table" (PLRMP p. II-29) reflects lack of old growth timber on productive sites. Age class 101+ years presently on forest is zero acreage. The Forest objective of 232,309 acres in the 101+ timber age class by 2030 is highly commendable. However of this figure at least 34,846 acres to 58,074 acres of well distributed old growth timber should be retained on timber productive sites. What is the Forest intention—to harvest 101+ year timber or insure old growth timber management necessary for a diversified MVP level distributed throughout the forest—?

d. Riparian Habitat. Neither the PLRMP/DEIS addressed the condition of riparian habitat. For example, Management Area 9A identified 9100 acres of riparian habitat but does not adequately address condition. How much habitat is in good, fair or poor condition and what is the current trend (i.e. percent riparian habitat improving, remaining static, or in a state of decline). Without such a measure, how can the public adequately assess Forest management progress in improving riparian habitat.

e. U-14 and Boulder-Grover Road Scenic Highway Nomenation: The Forest intent to nominate the U-14 and Boulder-Grover Road as scenic highways by 1990 is an extremely praiseworthly objective. The scenic value of these highways is of special significance and could only compliment the other unique scenic values that only southern Utah has to offer. Such a designation could only mean a long term investment in southern Utah's bid to increase a tourism base.

f. Minimum Instream Flow: Objective No. 31 (PLRMP p. IV-9) is probably, along with the protection and enhancement of critical wildlife habitat, the most important priority the Forest should consider. Without minimum instream flow protection, the State of Utah fanatical development approach to water under beneficial use definition, which minimizes fish habitat or riparian preservation, has the potential to further reduce or eliminate remaining free flowing southern Utah streams.

The goal is to make the 10% old growth well distributed throughout the Forest. In excess of 10% old growth would be desirable for some species. For others, it would not. Ten percent is desirable when it is necessary to consider other resource uses in addition to wildlife.

Serious errors were detected in the mapping of riparian management areas (Prescriptions 9A and 9B) in the draft Land and Resource Management Plan. These errors have been corrected in the final LRMP.

Based upon the comments received on the draft LRMP, Forest Management has re-evaluated the riparian area management prescriptions, particularly as they regard riparian area condition and grazing management. The lack of information currently available on the condition of riparian areas across the Forest is an impediment to the effective management of these important resources. To rectify this situation, an accelerated multi-disciplinary riparian area condition inventory is proposed for implementation within the first 5 years of the planning period. Information on impacted riparian areas acquired in this effort will be used to develop riparian area management plans addressing specific measures needed to improve a degraded area. This approach recognizes that there are different factors contributing to the condition of any particular degraded area. These problems require careful site specific evaluation to develop effective measures to induce recovery.

Grazing management policies in riparian areas geared primarily to Forest-wide forage utilization levels restrict the land manager in implementing innovative livestock management techniques which may provide more effective means to maintain streambank stability, riparian vegetation and other factors commonly impacted by livestock. Nor do they recognize the differences in productivity, stability, vegetative structure and response to grazing that occur among the riparian ecosystems found on the Forest. A more site specific management policy is proposed for livestock grazing in riparian areas.

We recognize that riparian areas are "among the most productive, sensitive, diverse and often most geographically limited ecosystems within National Forest lands". These areas are capable of supplying a wide range of high quality resources if properly managed. Where resource management activities result in tradeoffs, a careful evaluation is required to produce a proper mix of resource outputs. Because of the tradeoffs necessary in multiple use management of riparian areas, some resources will not be produced at their maximum potential. However, we do believe that the resource output goals of this plan maximize the net public benefit derived from riparian areas. At the same time, it provides for the maintenance of healthy riparian ecosystems, protects water quality and water delivery related values, and allows for the recovery of currently degraded areas.

Utah's water history has sadly resulted in over 53% of Utah's streams substantially dewatered. A reluctance by the states legislative body to inact instream flow legislation clearly indicates Utah's continued direction of irresponsible water use, especially when wildlife habitat preservation or protection is at issue. Hydroelectric power could intensify destruction of remaining fishery and riparian habitat unless free flowing ideology changes. Forest Service action and insistance on minimum instream flow is the only reasonable approach to save Utah's remaining free flowing streams.

g. Antone Bench CO2 Management Area (8A1); Transportation System Management Direction number 2 (PLRMP p. IV-130) to covert roads not needed for authorized activities to trails is of concern. To convert no longer needed graded roadways to trails appears to be away to avoid reclamation responsibilities. A trail the size of a road is contrary to the natural element necessary for a primitive experience. Is it possible a road system utilized for development purposes can no longer be reclaimed? For example, the current road to the present CO2 well site on Antone has been graded, can this road be reclaimed? Is topsoil been adequately preserved/ protected to allow for reclamation? Or, has this road already been designated for trail use upon completion of CO2 exploration/extraction is considered a viable economic activity. Antone Ridge is an important component of the Box-Death Hollow wilderness complex (even though excluded under the Utah Wilderness Act of 1984). Its character should be protected and activities detrimental to its character should be strictly monitored.

Thanks again for the opportunity to participate in the forest planning process! Would you please place my name on the mailing list to receive a copy of the Final LRMP/EIS and subsequent action that may necessitate changes to the final.

Cordially,

Cordell Peterson

L. Cordell Peterson

The current CO_2 well-access road down Antone Ridge extending from Hells Backbone Road to Mid-Continent's Charger No. 4 well, and the old Skyline well, are in a hold position - pending outcome of the proposed CO_2 development. The FS special use permit issued for the Charger No. 4 access road contained very stringent stipulations and we took extreme care to ensure protection of the surface resources - retain the primitive character of the area but still allow the oil and gas company to exercise its rights.

Antone Ridge is an important component of the Box-Death Hollow Wilderness area, and that its character should be protected and activities detrimental to its character should be strictly monitored. However, Congress made it very clear that the existing mineral rights be recognized, and authorized CO_2 leasing within the Wilderness Exclusion Areas 1-5 (fingers). Congress also specifically prohibited buffer zones around the Wilderness. The intent of Congress is very clear and the Forest Service must manage the area in accord with the Utah Wilderness Act of 1984.

Wildlife Management Institute
Suite 725, 1101 14th Street, N.W., Washington, D.C. 20005 • 202/371-1808

DANIEL A. POOLE
President
L. R. JAHN
Vice-President
L. L. WILLIAMSON
Secretary
WESLEY M. DIXON, Jr.
Board Chairman

January 13, 1986

Dixie National Forest
Attention: Forest Planner
Post Office Box 580
Cedar City, Utah 84720

Dear Sir:

The Wildlife Management Institute is pleased to comment on PROPOSED LAND and RESOURCE MANAGEMENT PLAN and DRAFT ENVIRONMENTAL IMPACT STATEMENT for the DIXIE NATIONAL FOREST, Utah.

We prefer "Alternative "E", nonmarket, because it is better for riparian systems and wildlife habitat. There also should be a high wildlife alernative prepared, because the nonmarket alternative has no significant reductions in logging or roads, both of which would benefit wildlife.

There are excellent quantities of old growth now on the forest. However, we challenge the statement (Page II-18, Plan) that 10 percent old growth is "optimal." No way is this true; 10 percent may only provide for retention of minimum viable populations.

How many times have the accessible timber stands, especially ponderosa pine, been high-graded? Repeated cuts can eliminate the clumps of mature pine essential for turkey roosts. This important habitat is mentioned only in the monitoring section. There should be forest-wide standards for retention of roost trees, standards similar to those on the Kaibab National Forest.

Proposals for riparian management are not satisfactory. They allow too much timber harvest and allow continued livestock grazing in the zone. This important habitat unit should receive priority protection. Such statements as the last sentence on page III-35, EIS, imply an attitude that lacks protection emphasis. Protection is the best management for riparian areas,

We are concerned about conflicts between livestock and wildlife on big game winter ranges. Language in the management area direction of the plan bears this out. Pages IV-98 and IV-103 say that in wildlife-livestock conflicts on winter range, livestock grazing "will be managed to favor wildlife." That allows judgment to select a minimum system. On page IV-110 (Plan) on the livestock grazing management area, much firmer language is used; "conflicts between livestock and wildlife are resolved in favor of livestock."

DEDICATED TO WILDLIFE SINCE 1911

RESPONSE TO LETTER 021

In excess of 10% old growth would be desirable for some species. For others, it would not. Ten percent is desirable when it is necessary to consider other resource uses in addition to wildlife.

More specific direction for management of wild turkeys is being included in the final plan and DEIS.

Serious errors were detected in the mapping of riparian management areas (Prescriptions 9A and 9B) in the draft Land and Resource Management Plan. These errors have been corrected in the final Plan.

Based upon the comments received on the draft LRMP, Forest Management has re-evaluated the riparian area management prescriptions, particularly as they regard riparian area condition and grazing management. The lack of information currently available on the condition of riparian areas across the Forest is an impediment to the effective management of these important resources. To rectify this situation, an accelerated multi-disciplinary riparian area condition inventory is proposed for implementation within the first 5 years of the planning period. Information on impacted riparian areas acquired in this effort will be used to develop riparian area management plans addressing specific measures needed to improve a degraded area. This approach recognizes that there are different factors contributing to the condition of any particular degraded area. These problems careful site specific evaluation to develop effective measures to induce recovery.

Grazing management policies in riparian areas geared primarily to Forest-wide forage utilization levels restrict the land manager in implementing innovative livestock management techniques which may provide more effective means to maintain streambank stability, riparian vegetation and other factors commonly impacted by livestock. Nor do they recognize the differences in productivity, stability, vegetative structure and response to grazing that occur among the riparian ecosystems found on the Forest. A more site specific management policy is proposed for livestock grazing in riparian areas.

Forest Service policy recognizes that riparian areas are "among the most productive, sensitive, diverse and often most geographically limited ecosystems within National Forest lands". These areas are capable of supplying a wide range of high quality resources if properly managed. Where resource management activities result in tradeoffs, a careful evaluation is required to produce a proper mix of resource outputs. We recognize that because of the tradeoffs necessary in multiple use management of riparian areas, some resources will not be produced at their maximum potential. However, we do believe that the resource output goals of this plan maximize the net public benefit derived from riparian areas. At the same time, it provides for the maintenance of healthy riparian ecosystems, protects water quality and water delivery related values, and allows for the recovery of currently degraded areas.

Language changed on IV 98 and 103, to give priority to wildlife in conflict situations.

We wonder why wildlife is not entitled to equally strong language on winter range mangement.

What are the goals of the Utah Division of Wildlife Resources? A comparison table of forest production and these goals should be included.

On page II-23 of the Plan, the value of an AUM is given as $8.06 while the fee charged is $1.35. This imbalance, $6.71 per AUM, should be compared with the cost of administration and range improvements. Especially in light of Table IV-29 of the EIS which shows recreation and wildlife are the highest in "Present Value of Benefits."

Some specific comments follow:

EIS

Page III-56d-nonmarket emphasis-transportation, How can a nonmarket emphasis be nonmarket if it "emphasizes high road maintenance for resource harvest."

Table IV-5, explain why no alternative meets goals of the Utah Division of Wildlife Resources.

Page IV-20, 1st paragraph. Why would an elk goal of 2,900 conflict with other resource goals in the forest? Who sets the goals and who is preparing an elk management plan? Who is choosing what resources to emphasize? The potential values of elk far exceed low quality timber or the cows ranchers claim they lose money by raising, even with their federal grazing subsidies.

Page IV-25, last paragraph. Incomplete; should also consider the irretrievable loss of wildlife caused by overgrazing of riparian zones.

Page IV-33. Why should timber management be allowed to remove cover on riparian zones?

FOREST PLAN

Page IV-7, Goal 21. "Reduce conflicts between livestock and wildlife for forage on critical big game winter range." This is not satisfactory. Conflicts should be eliminated by resolving them in favor of wildlife.

Page IV-20, last paragraph. The escape words "where possible" negate these goals.

Pae IV-30, Number 4. Do not discourage camping within 100' of lakes and streams; "prohibit" camping there.

Page IV-50. Add "To provide quality hunting" as a reason for road closures.

Page IV-139, Range Resources, Number 2. Not satisfactory, If a stock driveway damages a riparian system the driveway should be eliminated.

Page IV-145. A better explanation is needed for differences between management areas 9A and 9B (Riparian Management).

Page IV-5 mentions turkey roost trees. These should be in forest-wide standards for wildlife and timber.

Sincerely,

Daniel A. Poole

Daniel A. Poole
President

See EIS Table IV-5, pgs. IV-15a and 15b.

To emphasize road maintenance for resource harvest is a typographic error. Th statement is backwards. It shall read public safety will be emphasized for safety and convenience. Road maintenance for resource harvest will be only moderate with user performing road maintenance appropriate to their use.

The elk population goal of 2,900 was an estimate made during data collection for the RPA several years ago. No (or very little) examination of field data was done. Both the DWR and Dixie personnel question these figures. Elk herd plans are currently being written in cooperation with UDWR. When these plans are written and population goals are set, then the Dixie will support and strive to achieve that goal.

The only irretrievable loss over the long term would be soil loss.

Timber harvest practices in riparian zones will be modified to emphasize protection of riparian values. In some cases riparian stands can be managed using harvest practices so as to improve riparian habitat.

Conflicts in these areas would be resolved in favor of wildlife.

To prohibit camping within 100 feet of streams and lakes over the entire Fores is not always necessary; there are some areas where this will not cause damage. Also many of our existing campgrounds would have to be closed to conform with the 100 foot restriction.

Item H; "Use degrades the hunting experience". Added on page IV-50.

This is not an extensive problem on the Dixie National Forest. We are aware o only a few instances where driveways are impacting riparian areas. We are currently investigating alternative locations for these driveways and developing rehabilitation plans where needed.

Serious errors were detected in the mapping of riparian management areas (Prescriptions 9A and 9B) in the draft Land and Resource Management Plan. These errors have been corrected in the final Plan. We feel the description on IV-136 and IV-145 are adequate.

MR. JOHN LUPIS,
FOREST SUPERVISOR
DIXIE NATIONAL FOREST
82 NORTH 100 EAST
P.O. BOX 580
CEDAR CITY, UTAH 84720

DEAR MR. LUPIS

THE MOUNTAIN MEN OF THE WASATCH WISH TO TAKE THE OPPORTUNITY TO REVIEW AND COMMENT ON THE LONG RANGE PLANNING FOR THE DIXIE NATIONAL FOREST.

THIS CLUB FORMED IN 1969 HAS GROWN TO INCLUDE OVER 1,000 MEMBERS AND ASSOCIATES, INCLUDING SOME FROM THE AREAS DIRECTLY AFFECTED BY THIS PLAN. IT IS OUR GOAL TO PRESERVE FOR THIS GENERATION AND FUTURE GENERATION THE SKILLS, CRAFTSMANSHIP AND LIFE STYLES OF GENERATIONS OF THE PAST PRIOR TO THE TWENTY-FIRST CENTURY INCLUDING THE ABUNDANT WILDLIFE THAT WAS HERE FOR OUR FOREFATHERS.

WE FEEL THAT THE FOREST PLAN WITH THE BEST ABILITY TO PRESERVE WHAT WE WISH TO BE PRESERVED WOULD BE ALTERNATIVE E

THE PREFERRED PLAN B IS THE SECOND BEST BUT IS PROMOTING WAY TOO MUCH COMMERCIAL DEVELOPMENT OF RESOURCES AT THE EXPENSE OF OTHER RESOURCES, SUCH AS WILDLIFE, AND OTHER "NON COMMERCIAL" INTERESTS THESE NON COMERCIAL PUT LARGE SUMS OF MONEY INTO STATE AND LOCAL COFFERS. WE DO NOT BELIEVE IN "BELOW COST" GRAZING, OR TIMBER CUTTING AS IS PROPOSED IN THIS PLAN, WE FEEL THE OVER BUILDING OF ROADS USED TO ACCOMPLISH THIS IS NOT IN THE INTERESTS OF THE MAJORITY OF FOREST USERS. IT IS APROVEN FACT THAT AS ROAD DENSITIES, SOIL DISTURBANCES, VEGETATION DISTURBANCES, ETC. INCREASE, WILDLIFE NUMBERS WILL SUFFER DUE TO THE MANY NEGATIVE IMPACTS ON THIER HABITAT AND LIFE STYLES. THE OVER HARVESTING OF WILDLIFE SPECIES IS GREATLY CONTRIBUTED TO BY THE HEAVY ROAD DENSITIES PROPOSED IN THIS PLAN. PLEASE KEEP ALL UN ROADED AREAS UN ROADED.

The National Forest is managed for a variety of uses. All these uses must be balanced to provide the products requested by our many publics, while still protecting the resources. Commercial interests such as timber harvest, livestock grazing, mineral activity, and non-commercial interests such as motorized recreation all have a desire and a right to use the National Forest, provided they follow certain rules. While many may not agree with all of these interest groups, we have a duty to provide for their legitimate uses of the Forest. Each group; graziers, loggers, hunters, fishermen, mountain men, etc. is a minority, but taken together they make up the majority of our Forest users.

WE WOULD LIKE TO SEE MORE ELK AND DEER, WE FEEL THIS CAN BE EASILY ACCOMPLISHED WITH REDUCTIONS IN GRAZING, OF DOMESTIC LIVESTOCK.
TOO MUCH FORAGE IS ALLOCATED TO THESE MINORITY INTERESTS.
HOW ABOUT SOME EQUITY?
ALSO WE WOULD LIKE TO SEE MORE TURKEY AND WILD SHEEP.

FISHERIES IN THIS PROPOSED PLAN COULD BE GREATLY ENHANCED WITH PROPER PROTECTION OF RIPARIAN ZONES.

THANK YOU FOR ALLOWING INTERESTED GROUPS SUCH AS OURS THE OPPORTUNITY TO PARTICIPATE IN THIS PROCESS.

SINCERELY
James E. Salmon
FOR MOUNTAIN MEN
OF THE WASATCH

CC JAMES HANSEN, HOWARD NIELSON,
DAVID MONSON, ORRIN HATCH, JAKE GARN

Higher deer and elk populations are not quite as easy as simply reducing livestock grazing. Other legitimate uses; i.e. recreation and timber harvest must be considered. You must also remember that for many big game populations, the "bottleneck" is not the summer range which is provided by the National Forest Lands, but the winter range which is for the most part privately controlled.

LETTER 023

Jan. 16, 1986

Dixie National Forest
ATTN. Forest Planner
P.O. Box 580
82 North 100 East
Cedar City, Utah 84720

Dear Sir:

I am very greatly impressed by your Draft Environmental Impact Statement and Proposed Forest Land and Resource Management plan for the Dixie National Forest.

Although I have not read and digested the entire package, I can whole heartedly endorse the effort and the direction being taken for the management and use of these very special lands.

During my 34 and a half years with the Forest Service, I was priviledged to serve as Forest Supervisor of the Dixie for about 6 years (1973 - 1979). We accomplished a lot of good planning then and I believe were were pretty well on target with the present proposed Plan. Keep up the good work and know that you have my full support.

Sincerely,

Merlin I. Bishop

Merlin I. Bishop
Former Supervisor, Dixie N.F.

RESPONSE TO LETTER 024

THE WILDERNESS SOCIETY

FOUNDED IN 1935

17 January 1986

Mr. Al Schuldt
Forest Planner
Dixie National Forest
82 North 100 East
P. O. Box 580
Cedar City, UT 84720

Dear Mr. Schuldt:

The Wilderness Society is a national conservation organization of 145,000 members which devotes all of its resources to the preservation and wise management of America's public lands. Founded in 1935, The Society has been in the forefront of major conservation battles for half a century. We are glad to have this opportunity to submit to you our comments on the Dixie National Forest Draft Environmental Impact Statement (DEIS) and Proposed Land and Resource Management Plan.

The National Forest Management Act (NFMA) requires that every national forest be planned on a long-term, comprehensive basis. Congress passed the NFMA in an effort to reform longstanding forestry abuses on the national forests: excessive and damaging clearcutting and road construction, uneconomic timber production; loss of ecological diversity to monoculture, silting of streams, and inattention to recreation.

The Forest Service has been charged with the responsibility of protecting all resources, including fish and wildlife, soils and watersheds, outdoor recreation, range, timber, and wilderness. All of these resources must be fully and equally considered in management plans and the benefits from each resource must continue undiminished over time. It is our belief that the DEIS and Proposed Plan fail to adequately address these issues and responsibilities.

1720 RACE STREET, DENVER, COLORADO 80206

(303) 388-5801

RANGE OF ALTERNATIVES

The National Environmental Policy Act (NEPA) demands that federal agencies present and analyze the full range of reasonable alternatives for significant actions they propose. The Dixie DEIS presents eight alternative plans for the forest, but for some resources there is little difference among the alternatives. For example, all of the alternatives include an allowable sale quantity for timber above 20 million board feet (MMBF). The DEIS states (p. IV-11) that "Alternatives A, B, D, E, F, G and H . . . maintain the timber program at or above the current level . . . " In addition, all of the alternatives exceed the economically optimum level of 5.0 MMBF, which means that all of the alternatives call for below cost timber sales. Although the DEIS attempts to justify the size of the timber harvest on the basis of providing for community stability and vegetative management of pest problems on the forest, it is difficult to understand why some alternatives did not consider other options for addressing these concerns. (These issues are addressed in more detail below.)

TIMBER HARVEST

Demand. In spite of the fact that demand for timber has recently declined (DEIS, p. III-32), the Proposed Plan contends that demand for sawtimber in the regional marketing area will increase, and will in fact exceed supply (p. II-35). Yet, in 1984 the Forest Service failed to find a buyer for more than 50 percent of the timber offered for sale. In addition, lumber producers are turning back to the Forest Service and the Bureau of Land Management a great deal of unharvested timber due to low demand (an estimated 10 billion board feet across the country). The Plan should include documentation, if such can be found, for the prediction of an increase in demand in this area.

Sale price. The sale price used in the FORPLAN analysis is three times higher than it should be. Appendix B (p.BII-106) uses an average sale price of $50 per thousand board feet (in 1978 dollars). In 1984 dollars this would equal $74.25. In fact, high bid receipts for 1979 to 1984 averaged $26.43. As a result losses from timber sales are underestimated (see p. BVI-13, Average Annual Cash Flows and Non-Cash Benefits), especially when you consider that overhead and fixed costs are not included in these figures.

All of the benchmarks except Minimum Level were evaluated as alternatives, but not considered in detail. The Maximum PNV (Market and Assigned Value) benchmarks with annual harvest levels of 5.0 MMBF provide the lowest level of timber harvest considered and are part of what is considered a broad range of alternatives.

T2
Page III-32 mentions a temporary decline in timber demand. The Forest does not agree that additional plan documentation is needed to support demand for Dixie National Forest sawtimber. Recent offerings versus sold volume (during a nationally depressed market) and the fact that local mills are operating at minimum capacity because of supply factors (one mill has to transfer logs from another of its mills to maintain a single shift) substantiate this. Additionally, no alternative projects harvest levels for softwoods beyond current levels. In most cases projected softwood volumes are substantially less than current. Aspen markets are admittedly uncertain, therefore, conservative fuelwood values were used in the projection. Figures from the period 4/1/83 to 9/30/85, taken from the Small Business Administration set aside program analysis, are offered for your review. This includes all sales appraised at over $2,000 in value, unless otherwise noted. It is safe to assume that most smaller sales also found buyers.

PERIOD	OFFERED	SOLD	%	REMARKS
4/1/82 - 9/30/82	16.1 *MMBF	5.3	33	(9.6 sold 1/5/83, .5 sold 5/83)
10/1/82 - 3/31/83	10.4	9.6	92	
4/1/83 - 9/30/83	11.3**	11.3	100	
10/1/83 - 3/31/84	.601	.601	100	
4/1/84 - 9/30/84	22.6	22.6	100	
10/1/84 - 3/31/85	4.8	4.8	100	
4/1/85 - 9/30/85	30.7	20.9	68	(Additional 6.4 sold after period)
4/1/83 - 9/30/85	96,501	75.101	78	

*10.8 MMBF excluded from S.B.A. calculation (salvage).
** .5 MMBF excluded from S.B.A. calculation
***Considering volume that was readvertised and sold (not double counting offerings) 94% of all volume offered was eventually sold. Based on 86.401 MMBF offered and 81.501 sold during the period 4/1/83 - 9/30/85.

Regarding turnback volume to which you refer, the Forest was lightly impacted. One sale involving 2.82 MMBF was turned back with the purchaser paying $10/MMBF in damages for this volume.

The data you use (1979-1984) represents a dip in the market cycle. The $50/MBF you cite is an illustration assuming a certain species and stand diameter and, as stated, this figure includes road costs which are subtracted later. Given that our sale data represents a wide range of historical data over a wide range of market conditions and is adjusted to reflect on the ground conditions; timber size, species mix, roads in place, and logging method, we do not feel that timber losses are underestimated, especially over the long term. The process is somewhat subjective because of the uncertain nature of future economic conditions, however.

Uneconomic Timber Production. Timber sales in the intermountain region of the western U.S. have received particularly intense scrutiny as a result of the below-cost timber sales controversy. Because of low yields, generally poor quality stands, and high road building costs, receipts from timber produced in this region routinely fail to recover the costs of timber access and harvesting. On average, all 16 of this region's national forests failed to recover annual timber production costs during this six-year period. On the Dixie the ratio of timber receipts to expenditures over the last six years has averaged .30, or a return of 30 cents for each dollar spent. Yet the Proposed Plan calls for a continuation of current levels of timber offerings.

It appears that high timber offerings on the Dixie are being justified by (a) the need for community stability and (b) the need to control insect epidemics on the forest. These issues need to be examined in greater detail.

Community stability. According to the Proposed Plan (p.II-35), the Dixie over the past several years "has offered a steady supply of products to provide for economic and social stability" in dependent local communities. One of the goals of the preferred alternative (B: Composite) is to "maintain timber sale offerings in first decade at a level that will sustain present timber industry" (DEIS, p. II-13). The Proposed Plan, however, does not explain how uneconomic timber production will contribute to stable employment or demonstrate that the benefits of achieving this goal exceed the costs of the proposed timber program. In fact, a continuation of below cost timber sales on the forest is unlikely to result in greater local economic stability and may contribute to greater instability in timber dependent communities.

As explained in the recent decision issued by the U.S. Department of Agriculture involving the management plans for four national forests in Colorado, increasing a community's dependence on timber produced at a loss many be inherently destabilizing:

> . . . increased dependency upon submarginal timber sales would seem to result in potentially greater community instability due to uncertainties over continuation of a relatively high level of federal funding to support a timber program with costs greater than revenues. (USDA Colorado Appeals Decision-9)

A central assumption of the community stability policy is that if forests can be managed to produce a perpetual supply of timber, the economic stability of local timber dependent communities can also be maintained indefinitely. This assumes, of course, that timber availability is the key to

Your ratio of .30 cannot be confirmed because it is dependent on the costs and benefits you chose to attribute to the timber program. Data presented on DEIS, page III-33 indicates a ratio of receipts to expenditures of .44 for the first decade of the Composite Alternative. No other resource receipts - costs ratio is nearly that high. Moreover, timber costs include costs necessary to administer sales to the public of such goods as fuelwood, post and poles and christmas trees. These programs are thought to further reduce the ratio of receipts to costs for the timber program. You are correct in your assertion that control of insect epidemics and community stability are important considerations supporting the timber program. These items are impossible to quantify in dollar terms although economic impacts on local communities are displayed for each alternative. It is agreed that better quantification techniques are needed for these benefits. At present mostly subjective measures are all that are available and examination in greater detail is not possible.

The Dixie National Forest's proposed plan does not increase timber harvest levels and therefore it is not seen as increasing community dependence on the timber industry. Because local industries are operating at minimum capacities, even small immediate downward adjustments would cause large disruptions in local economies over the next few years. Because the Forest is the only local timber supplier, the plan provides forecasts of future product supplies in specific sale locations allowing industry to make adjustments based on their requirements. The Forest does not forsee increasing subsidies that would increase dependency. Future funding decreases will be met to the degree possible with increasing efficiencies in the Forest's timber program.

the level and variability of timber industry employment, tax revenues, and other economic variables that, in turn, influence community stability. However, as recent events in the domestic timber market attest--including large backlogs of sold but uncut timber--such "supply-side" reasoning is incomplete.

Clearly, the annual availability of timber--as measured by volume offered for sale by the Forest Service--is not the only factor affecting employment in surrounding communities. In fact, the primary determinants of the health of the timber industry and the stability of communities that depend on it have little to do with supply. Instead, forest industry employment is primarily affected by variations in the demand for wood and paper products and by the ability of the industry to adapt to technological changes in logging, wood processsing, and transportation. Attempts to buoy supply by maintaining uneconomic timber production cannot protect timber dependent communities from the more pervasive influence of market demand, technological change, and competition from more efficient producers.

In many communities, the problem goes beyond uncertainties surrounding the continuation of federal timber subsidies. In some areas amenities and other resources that are directly threatened by logging provide the greatest opportunity for economic growth and stability. If by maintaining subsidized timber production the Forest Service acts to diminish these resources, not only will the agency jeopardize the community's reliance on timber but it will also undermine a community's ability to shift to a more sustainable economic base.

The draft plan for the Dixie forest provides no discussion of these potentially destabilizing effects. Neither is there any explanation as to how uneconomic timber production, at levels proposed in the plan, is expected to contribute to community stability.

According to the recent Colorado appeals decision, "A particularly strong obligation is imposed on the Forest Service to explain the economic, social and environmental trade-offs which are likely to occur . . ." when the costs of a proposed timber program are expected to exceed its receipts (USDA Colorado Appeals Decision-6). The final plan for the Dixie National Forest should accept this obligation by exploring the full range of trade-offs implied by the continuation of below-cost timber sales.

Insect Problems. According to the plan, a mountain pine beetle epidemic currently affects about 30,000 acres on the Forest and a western spruce budworm outbreak affects about 45,000 acres (p. II-31).

According to the DEIS the principal method currently being used to minimize the impacts of forest pests on the Dixie is "the conversion of unmanaged timber stands to managed stands in the shortest time possible" (p. III-54). As a result many old growth timber stands would be harvested. As the DEIS states,

> Economics and timber demand will play a large part in the Forest's ability to manage these high risk stands. A good proportion of the remaining old growth is located on slopes over 40 percent, and require the use of cable or aerial systems for harvest. Stumpage value and locally developed technology are important factors in the feasibility of harvesting high risk stands on these areas. (p. III-54)

Several problems must be addressed before harvesting such old growth stands. First, aerial logging is very expensive and can rarely be justified in the national forests. Cable logging is also expensive and difficult to justify. In addition, neither alternatives to this kind of vegetative management nor its effectiveness in controlling forest pests is discussed in the DEIS. Also missing is a complete discussion of the environmental impacts of logging such steep slopes. All of these issues should be addressed in the Proposed Plan and DEIS.

Clearcutting. The draft plan fails to justify why even-aged management is the best biological and ecological timber harvest method for the Dixie in spite of the fact that the practice of clearcutting is highly controversial. The NFMA specifies that clearcutting can be used only where "it is determined to be the optimum method . . . to meet objectives and requirements of . . . land management plans (NFMA Sec. 6(g)(3)(F)(i)).

The proposed plan contends that removal of less valuable stands of timber is necessary in order to grow large areas of more valuable (i.e., younger) trees. This argument ignores the value of old growth stands and the environmental degradation that clearcutting causes. Many forest resources benefit from multi-story, multi-species timber stands. Few wildlife species, for example, benefit from one-species stands of trees that essentially amount to nothing more than tree farms.

Even-aged management also contributes to the probability of insect or disease outbreaks in timber stands, problems that the Dixie is supposedly attempting to avoid.

Discussion of the use of prescribed fire as a vegetative management tool is made in the D.E.I.S. and plan and was considered in the formulation of alternatives. Additionally the prescribed fire discussion will be strengthened in the documents.

Cable logging technology is available on the Dixie. Mitigation measures to prevent unacceptable environmental damage will be formulated on a project basis as with tractor logging. A major reason for specifying cable logging in specific areas is to prevent damage to the environment.

Even-aged management (shelterwood) but not clearcutting is the predominant silvicultural system used on the Dixie. Prescriptions for stand treatment on the Forest have been based on the species and the particular area involved. The principles of even-aged and uneven-aged management are being followed and harvest cutting ranges from clearcutting to shelterwood and selection systems. The Forest is not trying to justify even-aged management as the best biological and ecological harvest method. All timber harvest and cultural treatments applied must be consistent with the silvicultural prescription for each stand. Prescriptions must be consistent with the environmental assessment for each project and must follow standards and guidelines set forth in the Forest Plan and Regional Guide.

Present conditions on the Forest suggest a structure that is dominated by mature and overmature trees that cover large areas. These stands have become established over somewhat broad areas following natural disturbances such as fire and insect outbreaks relying on waves of regeneration facilitated by the coincidental occurrence of proper climatic conditions (moisture) and seed crops. The Forest sees opportunities to increase diversity through timber management over the natural condition, not to create large monocultures as you suggest. You are correct that large expanses of even-aged stands can increase insect and disease outbreaks. This must be qualified by adding that the stands are overstocked and of poor vigor. Available evidence does not suggest that even-aged management, by itself, perpetuates such conditions. Even-aged management has been shown to be an effective (if not recommended) management tool in the control of spruce budworm, limb rust and dwarf mistletoe and in minimizing residual tree wounding (fewer stand entries) and the spread of root disease. Likewise high stand densities and poor vigor have been shown to be key variables contributing to outbreaks of mountain pine beetle. Size of stands and distribution of age classes can also be controlled to reduce the occurrence of Forest pests.

The maintenance of old growth stands is of important concern especially with respect to wildlife species dependent on this habitat. The needs of these species have been considered taking into account, unsuitable timber, constraints placed on the timber base and snag management guidelines. In the opinion of Forest specialists these requirements will be met.

Identification of Uneconomic Timberlands. The Forest Service is required under the NFMA to identify lands that are not suited for timber production, considering physical, economic, and other pertinent factors. In the absence of special mitigating circumstances, these lands are to be taken out of production for a period of ten years. This requirement was recently reiterated in the Colorado appeals decision. The Colorado plans were overturned, in part, because they failed to adequately address the issue of economic suitability:

> . . . the EIS and plan contain no indication that the suitability analysis required by 36 CFR 219.12 (b)(2)(1982) (Stage II analysis) is available . . . The Stage II analysis should provide both decision-makers and the public with information about the specific areas on the forest where management for timber would be the most cost efficient. It also provides important information about the economic efficiency of various land management prescriptions when applied to specific lands . . . The forests should discuss the results and implications of this economic analysis in a way that is meaningful to the public and should describe *in the planning documents* [the plan and DEIS] how this information was used in the formulation of alternatives, [and] in the development and selection of prescriptions to be applied to specific lands [considered for] timber management. (USDA Colorado Appeals Decision -10, 1985, emphasis added)

The wording of this decision makes clear that: (1) the economic suitability analysis should refer to *specific* land areas on the forest; (2) the analysis should be used in developing alternatives considered in the DEIS; and (3) both the results of the analysis and a clear explanation of how they were used in developing alternatives should be presented in the DEIS and forest plan.

The draft plan for the Dixie appears to violate all three of these requirements. Instead, forest planners for the Dixie simply declare that all lands needed to produce a pre-assigned harvest level are by defintion economically suitable.

In effect, the Forest Service sidesteps the issue of economic suitability by equating economically suitable lands with lands that are "efficient" in meeting timber production goals. The latter is a reference to the way that the Forest Service planning model (FORPLAN) selects lands to be included in the timber base. Typically, the

We agree that from an analytical viewpoint some of our suitability classification descriptions may not be as descriptive as some would like; this would apply primarily to suitability determinations made beyond identification of the tentatively suitable lands. The Forest has followed the necessary procedures and processes that identified both the tentatively suitable lands, and the suited lands determined by the management prescriptions and other considerations beyond identification of the tentatively suitable lands and that they are accurately and adequately discussed in Chapter II and/or Appendix B of the EIS. Discussion includes productivity, economics, timber demand, utilization, harvesting and milling technologies, regeneration problems, lands where unacceptable resource damage may occur, requirements of other resources, etc. As provided in the monitoring plan and 36 CFR 219.14(d), the classification can be reconsidered at any time should our knowledge of the factors that determine suitability change substantially. Presently, the Forest is committed to an accelerated stand examination program and the identification of site specific areas where unacceptable resource damage can occur to verify suitability determinations. The Plan does address, specific to site, the location of all timber sales that would occur under the proposed action and they are in harmony with all standards and guidelines set forth in the document as well as all applicable laws.

model is instructed to maximize present net value subject to a number of pre-assigned constraints. The Forest Service may, for example, instruct the model to include enough land in the timber base to produce a certain annual harvest. FORPLAN will then determine the most cost-effective way to achieve this goal by adding lands to the timber base, beginning with the forest's most productive land, until the harvest constraint is met. If the harvest constraint is so high that it requires including lands in the timber base that will lose money, the model insures "efficiency" by losing as little money as possible.

Unfortunately, this process reveals nothing about the location or amount of economically suitable land on the forest. More important, it leaves the public completely unable to judge the trade-offs made in assigning specific areas of the forest to different uses. As noted in the USDA decision, an economic suitability analys should display precisely the type of information needed to understand these trade-offs. Without such an analysis, the public is effectively excluded from meaningful participation in the planning process.

The Forest Service should, therefore, donduct a detailed site-specific economic suitability analysis for the final forest plan. In addition, the final plan should include a clear explanation of how this analysis was used in formulating various alternatives and in selecting the preferred alternative.

The plan's failure to present an economic suitability analysis is particular significant in view of the losses espected from the proposed timber program.

ROADLESS AREAS.

In 1984 83,000 acres of land on the Dixie National Forest were set aside as wilderness with the passage of the Utah Wilderness Act. According to the DEIS (p. S-10) an additional 555,390 acres on the forest meet the minimum requirements for wilderness. Over 90 percent of these remaining roadless lands "would maintain their present qualities through the first planning decade". This represents a clear--and very welcome--attempt to keep options open on this acreage for future wilderness consideration.

We are concerned, however, that none of these roadless areas will be managed for primitive, non-motorized recreation. The Management Area Prescriptions include only a Semiprimitive Recreation designation, which allows for

The Forest adopted a semi-primitive recreation designation to avoid the misunderstanding that exists between semi-primitive motorized and unmotorized designation. The objective for these areas is to provide a perception of remoteness, and provide a semi-primitive recreation experience. If it is necessary to enter these semi-primitive areas to manage for some natural disaster or to provide for the needs of wildlife, when that opportunity is available. The definition the Dixie is using for primitive recreation is that we may enter an area for management purposes if it becomes necessary; however, our objective is to provide for a remote recreation experience. In addition, the forest has decided to designate some areas as no-surface-occupancy for oil and gas leasing. This will further assure the semi-primitive recreation experience planned for these areas. (See New Management Area 2A#.)

building roads and cutting timber, and a Roaded Natural Recreation designation. Activities allowable under these management prescriptions would foreclose future consideration of these areas for wilderness designation. We therefore recommend that a large portion of the roadless lands on the forest be allocated to primitive or semiprimitive non-motorized recreation. This would seem especially provident since demand for timber is down, while demand for wilderness recreation is increasing throughout the country. In fact, the Proposed Plan shows the demand on the Dixie increasing from a current level of 8.0 thousand recreation visitor days (MRVDs) to 46.8 MRVDs by the year 2030.

RANGE

The draft plan does not treat current range vegetation conditions and trends for the Dixie National Forest in a satisfactory manner. The Forest Service displays the condition data and trend statistics separately. Thus, there is no way to evaluate whether or not the acres that are in good condition exhibit a stable or downward trend.

In addition, the forest is losing money on grazing. According to Appendix B (BII-102), the value of livestock forage per animal unit month (AUM) is $5.80, but the Dixie is only charging $1.35 per AUM. As a consequence net range receipts for the first decade are a negative $374.00,

SUMMARY

In summary, the environmental consequences of all the alternatives in the DEIS need to be described in much more detail, as do the mitigation measures that would be undertaken to protect the natural resources of the forest. The preferred alternative needs to be reevaluated in light of the above problems and then reconstructed so that the concept of multiple use and sustained yield is rigorously applied to the management of this important area.

Sincerely yours,

Dianne Andrews

Dianne Andrews
Administrative Assistant

Darrell Knuffke

Darrell Knuffke
Regional Director
Central Rockies Region

Clive Kincaid

Clive Kincaid
Southern Utah
Wilderness Alliance
Springdale, UT 84767

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See Table IV-9 on pages IV-22(DEIS). We are confident that with all grazing allotments on the Forest under management that we have no acres of suitable range in a downward trend. Although our discussion and the tables indicate that the "Good" condition acres are in a "Stable" trend, we feel that this may be a somewhat conservative position, ad that some of this acreage is in an "Upward" trend. All acreage in "Fair" or "Poor" condition is in an "Upward", or at least "Stable" trend. As Table IV-9, acreage in "Poor" condition will be gradually reduced throughout the planning period under the Preferred Alternative.

Utah Wilderness Association
455 East 400 South B-40/Salt Lake City, UT 84111/(801) 359-1337

January 16, 1986

Mr. John Lupis
Forest Supervisor
Dixie National Forest
Box 580
Cedar City, Utah 84720

JAN 16 1986

Dear John:

Enclosed are our comments on the Dixie National Forest Land and Resource Management Plan. As we reviewed the plan, met with your planning staff and talked to various Dixie officials the plan began to look more like an illusion of a plan than a forest plan responding to a broad array of public concerns, resource tradeoffs and "real" ground. No doubt, however, it is a much better plan than some others in Utah as I indicated to you back in early December. But our initial praise of the plan has been tempered by an in-depth analysis.

The plan does acknowledge timber economics in more of a realistic manner. It does acknowledge range economics in a more realistic manner. It does make a good decision on timber producing less than 20 cu^3/acre/yearly categorizing it as unsuitable. It does acknowledge problems have existed in the past with over-harvesting in the pine belt.

However, for every reasonable attempt at resource issue identification or reasonable discussion there exists a failure to follow the discussion to the obvious conclusion and there exists an equally poor discussion or failure to acknowledge public concerns.

We have gone into great detail on a number of issues to raise our concerns. Within each of those issues, though, rest a number of very fundamental and substantial errors which we will highlight here in order to make the point exceedingly clear.

Public Issue and Concerns

Incredibly enough, the plan disposes the issues of roadless and unroaded management raised by a number of publics. While it is legitimate for the forest to dispose of the wilderness allocation issue and not perform a roadless inventory it is incorrect to say, in that case, *unroaded or roadless areas are not an issue and thus we will not consider that issue and will take no effort or initiative to utilize a nondevelopment prescription of unroaded areas of high interest.* The logic seems to follow that because the Utah Wilderness Act is now law, unroaded management is no longer relevant. I distinctly remember discussing this point with you and a number of your staff during a forest planning meeting in 1984. Though I am quite sure some members of the Utah congressional delegation and unfortunately a number of Forest Service officials (out of expediency) would like to eliminate the issue it isn't going to be eliminated. It simply makes forest plans unacceptable documents and mocks multiple use public issue planning. For years the Forest Service has flaunted its desire to manage areas in a natural state without the need of a Wilderness Act (it is important to realize the Utah Wilderness Act did not prevent unroaded area management or designation). And for years when given the chance to respond the agency backs off rapidly. That is precisely what has happened here. Why? We talked of this during the Silvicultural Conference in Ogden early in December and I assure you with a bit of effort on the part of the Forest Service a number of public concerns will be solved and the near fatal erosion of the agency in the eyes of the public will slow down. If major public issues continue to be ignored then the planning process is fruitless.

Public Involvement

Generally the Dixie has done a good job and we want to compliment you. We have met with you and your staff both in Cedar City and Salt Lake City and the Dixie has been responsive to our concerns--until the end of the process! On December 12 George Nickas and Gary Macfarlane met with Al Schuldt and Calvin Bird. A number of informational requests were made by UWA (and emphasized in a letter to your office following this meeting). Answers and documents were promised and the Dixie officials knew of the need to rush the material to our office in order to help our understanding of the plan and prepare a comment. Some of it arrived, after further phone calls on our part. However, the key document, the AMS, arrived with ROS maps, timber sale maps and answers to some questions on January 14, 1985, 4:15 pm, 2 days prior to the end of the review period. The timing has made it impossible to review all of that document and associated material.

Budget

Like most forest plans the Dixie assumes a remarkable budget increase. The current budget of the forest is reflected in the forest plan (1982 dollars) in Alt. D, Current Budget. Alt. B shows a first decade budget of $7,616,000(!), a mere 40% increase from the current budget!! That is simply absurd. To be blunt, even when Congress is at its "liberal" best, increases in real dollar terms of that order have not been realized. Though we recognize a number of

The Forest is not trying to avoid the issue of back country use. We are in the process of completing a Forest Travel Plan which will designate areas where motorized travel will be restricted or prohibited. The forest has also decided to give further emphasis to the unroaded areas by designating some of these areas as no-surface-occupancy for oil and gas leasing. Semi-primitive recreation area does not totally prohibit the use of motorized vehicles but as is stated in the description of this area. The area will provide an opportunity where the experience is dependent upon a perception of remoteness and closeness to nature. (See New Management Area 2A#.) The Forest is providing 222,300 acres of semi-primitive recreation. There is over 500,000 acres outside of wilderness that will remain undeveloped during the planning period.

An apology is in order for the tardiness of the response to your request for more information.

The plan reduces the timber and road construction budgets. Amenities are emphasized in the plan and if funding is less than required to totally implement the plan, emphasize will still be on the amenities.

"accounts" are coming due as described in the forest plan, one way to solve this problem is to eliminate a considerable portion of the timber program and substitute dollars to these "accounts." Our recommendations in timber and range would see budgets coming in under the current budget. This would then allow adequte budgeting for the noncommodity resources. The simple matter of fact is that the highest percentage of any decade's budget still goes to timber and that is simply a bad investment on poor timber. The budget that would accompany our proposals calls for increases on a level that is at least attainable. The budgets in the Alt. B program are not attainable. And with that, what happens to the plan and forest when the Alt. B budgets are not realized? How will you determine what will be funded and prevent those marginally funded "accounts" from coming due?

Maps/Information

The plan contains no maps showing timber sales, timber suitability, Visual Quality Objectives, Recreation Opportunity Spectrum, oil and gas capability or leasing stipulation maps. These are all musts. Each of these topics is discussed frequently but it is virtually impossible to determine where activities on the forest will or won't be allowed because the plan has less than rudimentary maps. It is probably even possible to map each of these displays on the alternative maps included in the plan. At the minimum, however, each must be prepared for the preferred alternative.

Array of Alternatives

The array of alternatives simply doesn't exist. Unroaded lands routinely are not acknowledged. There is not one alternative with a non-development prescription. Mineral impacts will be the same under each alternative. The non-market alternative has only 20% of the forest in a totally (4%--the same as every alternative) or highly restricted category. The documents state, in fact, restrictions to control mineral activity "would be essentially the same in every alterntaive." Hardly an array. Range allocations are largely grouped at the high end favoring wildlife with only 2 of the 8 alternatives reducing grazing AUMs below the current program. Timber volumes are also without variation, with the exception of 2 of the 8 alternatives. Here Alt. A and Alt. B are identical! The array of alternatives doesn't meet the requirements of addressing numerous issues with various strategies of resolution.

In essence this plan places more and more emphasis on lower and lower quality timber for the next 70$^+$ years. The reason? Overharvesting of the forest and now the reliance on hiding in the aspen and spruce and fir forests, which encompass far more economic, access and environmental problems, as well as limited demands. It is a plan which reacts to mineral industry concerns and does very little to actually plan, zone, restrict or anticipate mineral development. Literally, the entire forest, under this plan, is open to some sort of mineral development. It is a plan which measures domestic cows and sheep in the tens of thousands and only double digits for goshawks. It is a

Most of these maps and information are available but they are of little interest to most reviewers and we have chosen not to publish them in the plan. It would also be cost prohibative to mass produce maps. The management area maps and plan show timber prescriptions plus the ten year timer sale list in Plan.

The benchmark alternatives included some very low outputs. These alternatives were dropped from consideration for various reasons. A change was made in the final Plan to more clearly recognize the sensitivity of some of these areas through the establishment of no-surface occupancy stipulations for mineral activities.

plan which recognizes unroaded areas are an integral part of the forest and value of the forest but does nothing to protect one area, making the recognition moot and questionable. It is a plan filled with development prescriptions and not one non-development prescription. It is a plan which arbitraily disposes of some public issues and fails to meet the majority of the public issues and concerns.

It is a plan in the generic and hypothetical sense. The description of environmnetal impacts could easily be lifted verbatim and placed in a forest plan for northeastern Utah, the northeastern U.S or southern California. There is no mention of the unique conditions on the forest. It is quite typical to see this sort of statement, "Forest roads can lead to big game disturbance by supporting increased traffic in remote areas. The amount of disturbance vaires as to type of road, type of toography, location, and habitat sensitivity." Another statement, again quite typical, reads, "Construction and reconstruction of local roads would alter scenic quality."

Both statements are true for this forest or anywhere else. How will new roads on the Dixie impact the sensitive species on this forest in the various habitats they occupy? Is there enough diversity and hiding cover on all of the forest? What areas of scenic quality will be disturbed? To simply put generic statements about a forest fails to acknowledge the uniqueness of Utah's largest forest. The Dixie is composed of "one of the largest high elevation plateaus in the United States..." Elevations vary from "2,800 feet...to 11,322 feet..." The forest harbors deep slickrock canyons and some of the most xeric sites in the Intermountain West. This is acknowledged in the discussion in Chapter III but is never discussed or referenced in Chapter IV where it counts.

I urge you to recall the remarks made at the Silvicultural Conference in Ogden concerning planning decisions, decision making and public involvement. I do hope our effort on this comment will help prepare a better forest plan. We look forward to working with you and your staff and we will be glad to answer any questions you may have concerning this comment. Thanks very much and good luck! I also want to acknowledge the effort by George and Gary in preparing this comment.

Sincerely,

Dick Carter
Coordinator

George Nickas
Resource Specialist

Gary Macfarlane
Resource Specialist

Timber

This section of the draft EIS and plan constitute the classic "mixed bag." Unfortunately, the discussion within the plan and draft EIS verges on the hypothetical and severely denigrates the approach to timber on the forest.

The decision to place the less than 20 cu^3/acre/year in the unsuitable category is commendable and perfectly justifiable based on the lack of data and recommendation to gather the data after this first planning decade. This probably is the highlight of the forest plan because it is a sound biological decision.

Unfortunately, the plan and d. EIS chose to ignore the Max. PNV (and Max PNV assigned values) run which says to maximize the PNV (the objective function and entire purpose of forest planning) and harvest timber within that constraint the Dixie should allow harvesting on about 5 mmbf for the first two decades. Though both benchmarks are disposed there is no discussion as to why the timber volumes are not incorporated to meet the literal purpose of the planning. Why has the Dixie chosen to increase timber harvesting substantially over the FORPLAN selected volumes? Also, under both benchmarks we would like to see the amount of land FORPLAN placed in the "total suitable" categoryfor the max PNV and PNV benchmarks.

The purpose of Forest Planning was not maximizing PNV dollar amounts but to maximize net public benefits which included benefits which have dollar values that are hard to quantify (examples: community stability, resource protection, etc.). We feel that you would agree that the driving force in planning decisions should not be based solely on receipts, but should include non-dollar valued benefits.

The Dixie used a discretionary constraint on Alt. A and B which placed a 10 year average harvest floor "over" the maximize PNV constraint. Seriously, we want to know why the Dixie plan used this floor? What did it accomplish within the context of botheconomic efficiency of timber use and how it meets the overall goals of the forest plan?

We agree that effective management methods could increase timber harvest on our most productive lands. In fact, we included these assumptions in our projections. However, maintaining a harvest floor also required drawing additional acres into solution. The harvest floor was based on providing the raw materials needed for community stability in the first decade.

This is a particularly valid concern as it is evident the direction of the plan and d. EIS is to now manage even more marginal timber lands, clearly aggravating the "below-cost" issue. In other words FORPLAN, without the discretionary constraints, directs the timber program to the most efficient timber harvesting and thus maintains timber harvests quite low. The Dixie National Forest preferred alternative alters this course. Ironically, the plan doesn't alter this direction by requiring more effective silviculturalists and foresters but by placing more and more emphasis on lower and lower quality lands. Why does the plan choose this direction?

It is undeniable this is happening. The best timber--ponderosa pine--has largely been cutover and must await 50^+ years before second growth stands are ready for harvest. The plan and d. EIS state this resoundingly. The plan and d. EIS also note the second growth ponderosa has not responded as well as originally thought with respect to regenrration or increased growth. In fact, the plan and d. EIS state a second precommercial thinning is necessary to "produce sawtimber within a reasonable time frame." What does a "reasonable time frame" mean? How many years? Obviously, the standard rotation must be exceeded. As well, a second precommercial thinning application to the cutover stands increases the cost issue dramatically and will reduce the benefits as dramatically as the investment crop is smaller in diameter and "pushed" further into the future. This is a strong indicationeven the ponderosa is ver marginal and suited to timber harvesting as proposed.

Because of this clear overcutting, the plan and d. EIS were forced to reduce sawtimber outputs in this decade and substantially reduce them for decades 2 through10. However, rather than "face the music," the Dixie rolled aspen harvests into the ASQ in a quantity to maintain the ASQ at a nondeclining level. Looks good on a graph and likely appeases some "collective conscious." But it makes no forestry sense (John, I urge you to remember the silvicultural conference in Ogden, December 3, 1985 and the remarks made by Professor Lundberg). It makes no economic sense. It makes no biological sense. It makes no sense from the perspective of a lumberman. Since 1972 the Dixie has "produced" an average of 352 mbf of aspen cordwood. The highest production figure was 1,147 mbf. 1983 and '84 saw production of '0'. The plan and d. EIS note the demand for aspen cordwood "is now less than in earlier years." There is a great ring of laughter that is due that statement as it would be hard to imagine a situation that could be defined as a "lower demand." However, the plan in the face of limited demand (that is a polite understatement) decides to harvest 2.8 mmbf of aspen sawtimber annually in this decade and then average 9.1 mmbf of aspen sawtimber annuallly for the next 3 decades. After that the harvest drops to 3.7 mmbf for decade 5, 1.9 for deaced 10 and 2.7 for decade 15. The increase in 150 years, I guess, represents the falldown in conifer harvests as the forest continues to stress the ability to grow conifers in a marginal environment.

So it is clear the the aspen volumes, not cordwood or roundwood, but sawtimber, are in the timber volume projections to give the public an impression the 10 year average sustained yield of timber is being met. It - isn't.

And all of this is being done in the face of a declining demand and some of the poorest economics around. The plan and d. EIS make no reference to aspen being probably the poorest timber investment on the forest. The plan makes no reference to the difficulty of managing and harvesting aspen. The plan makes no reference to the rotation age of aspen. It makes no reference to the fact that at about 80-90 years heart rot is a serious problem in almost all aspen stands.[1] The plan makes no reference to the small diameter and volumes of aspen typically encountered.[1] The plan shows no site index or quality for aspen. It is considered almost always as poor or very poor. The plan discusses none of the problems of regeneration in terms of the rapid and overabundance of stems and the need for precommercial entries. The plan fails to acknowledge the impacts to aesthetics or wildife habitat or watershed concerns with harvesting aspen on the forest at the rate it is proposed to be harvested. Remember, since 1972 the Dixie has averaged a harvest of 352 mbf and is now proposing to harvest eight times that much annually in this decade and even more for the next three decades! The economics of growing a second stand of aspen is poor and we would like to see the analysis in the d. EIS and plan. Also, we would like to see the predictions for second stand growth. It also appeara environmental impacts are based on the past average of aspen harvesting rather than the phenomenal harvest rates projected

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[1] -Aspen:Ecology and Management in the Western United States, DeByle, et al. USFS, RM-119.

The silvicultural system applied to ponderosa pine is a two step shelterwood. The first entry is a seed cut at a 120 years, the second entry is a removal cut at 130 years or 140 years. This rotation will not be exceeded because of a needed second precommercial entry. Precommercial is a slight misnomer, since much of the area referred to will provide the public with fuelwood in an area of heavy demand. Also, precommercial thinning will not increase costs dramatically given relative low experienced costs. Benefits will increase due to shortened rotations and larger product sizes. PNV will be decreased because costs are incurred before benefits, and discounting is applied over a longer period of time to benefits than to costs. Much of our ponderosa pine is not marginal with high relative selling values and existing road access.

In our discussion on aspen, we are are showing that aspen would be needed to meet the non-declining yield constraints. We have stated that at present there is not a large market for aspen, nevertheless serious inquires about aspen resources have been made by industry. The equivalent of 2.8 MMBF will be offered on an average annual basis during the Plan period.

Aspen is not necessarily a poor investment given a market since investments would only be made at final harvests, not in cultural treatment. All volume projections were based on this assumption. In fact, aspen would have the lowest overall cost of any species with extremely low preparation and administration costs, and abundant natural regeneration.

We feel that the aspen diameters and volume per acre reflected in the plan are realistic. We are projecting an 80 year rotation with defect of at least 21 percent depending on the size and age of the stand at harvest.

Our aspen should probably have been displayed as roundwood rather than sawtimber. In the Plan, the higher saw timber merchantability standards were applied providing a more conservative estimate. This does not effect long run sustained calculations or benefit values because conservative fuelwood values were used for all aspen.

Aspen sites on the Dixie National Forest are among the best in the State.' Aspen frequently occupy very productive sites. The economics of the second growth aspen should be comparable to present stands, and should actually improve with shorter rotations and less product defect.

In essence, what the plan does is trade a questionable timber harvesting program with ponderosa for an unquestionably poor economic and forestry investment, aspen. That is poor planning and is a result of literally a botched timber harvesting program during probably the last 3 decades. And simply put, the plan fails to acknowledge the problems of making this change and explaining why it is necesssary.

The same holds true for the harvests moving from the pine belt to the spruce-fir type. It is a species-type much harder to manage, due to regeneration problems and access, rotation ages and small second volumes. It is a species associated with headwaters of streams making watershed management more difficult and it is also an important component for wildlife and dispersed unroaded recreation. The plan and d. EIS indicate management will largely be of even aged/clearcut type. The resulting regeneration problems associated with a species on the Dixie National Forest, almost always occurring above 10,000 feet, will be serious. In fact, the plan and d. EIS acknowledge regeneration problems in this type and the mixed conifer type. The plan goes one step further by noting regeneration has received "little emphasis." Why? That sends or should send a shudder down the back of the professional forester. It sends a shudder down the backs of the publicl

Why is the Dixie choosing to use even-aged management and clearcut type harvests on shade tolerant spruce and fir on [illegible] highly irradiated plateaus primarily above 10,000 feet? What portion of the suitable land base is occupied by the spruce/fir type and the aspen type? Where on the forest will sruce/fir be harvested? While there may be a few large trees within this type the problem of much smaller second growth within the 140 year rotation is very real and is not discussed in the plan or d. EIS. Clearly, there will be a fall down in volume of this typeas it is simply replacing ponderosa volumes now lost.

Appendix B, Page II-96 and VI-3 state that clearcutting was used only to model spruce-fir harvest. Appropriate area control constraints were applied to approximate special silvicultural consideration for the species and project their impact on volume production. Some even-aged management (shelterwood) would be used with these species.

The statement on Page II-31 of the Proposed Plan indicates that little emphasis was placed on spruce regeneration in the past, primarily because such harvests (sanitation/salvage) did not necessarily require regeneration. Emphasis will be placed on regeneration in all types where regeneration harvests are made.

Your interpretation of mill capacity (55 MMBF) is correct. It is based on the Panguitch and Escalante mills operating at a two shift level, and small mills operating at their present level. This is the top level of efficiency for those mills. This we feel is a good approximation of present demand. Your reference to a (bottom line) single shift is indeed where the two large would be operating under the proposed plan during the first decade. Our intention in displaying the 55 MMBF capacity was to show under all alternatives there is existing capacity to process the amount displayed as offered. This does not assure all offered material could be economically harvested. Future harvest levels will be effected by the markets, utilization standards, and technology available.

The same holds true for this type as the aspen harvest situation. The forest finds itself in a position of having to go to a consistently poorer investment in every sense of the word. In this case regeneration problems, harvesting problems access problems and high elevation constraints are serious and have not been been addressed.

We are unclear with respect to the inference in the plan and d. EIS concerning cable logging. It is noted some cable sales have been made on the forest. Were they harvested? Where? What species? What volume? How many sales? It is noted Alt. B would allow some cable sales. Again, where? How many? What species? Why would cable logging be allowed? Given the direction of the plan it would appear cable logging might occur primarily in the mixed conifer, aspen and spruce/fir types? It would appear the marginal component of timber would be that timber harvested by cable logging. Certainly, this simply makes it more, if that is possible, marginal! Again, the direction is toward a more extensive, rather than intensive, harvesting regime relying on poorer silvicultural, forestry and economic investments.

We are a bit confused about the discussion in the plan and d. EIS dealing with estimated mill capacity. The documents note maximum mill capacity is 55 mmbf. However, the plan then states this is a maximum two shift operation for the large mill operators. To use that as the demand level is absurd. The records in the plan show nowhere near 55 mmbf has ever been given to the mills using Dixie timber. It is obvious the mills have never operated two maximum shift operations. The demand from the mills should be considered the "bottom line" operation, not a hypothetical two shift maximum operation.

There are a series of mistakes on Chart IV-15 which should be resolved. There is also a mistake on Chart II-19, page II-52d, under Timber, ASQ, Decade 1 Alt. E, top line.

Concerning the below cost issue as discussed in Chapter II, III and IV, d. EIS, we have a number of concerns. First, the discussion initiates the issue as being a national issue which has "not emerged locally." That is incorrect and we urge you to look at the Spectrum editorial, September 20, 1985. We, of course, will take an opportunity to provide you an accurate and shortened version: "And once these forestry roads are cut through our scenic wilderness lands, they are there to stay. Their existence means vehicle access and environmental deterioration." The article concludes by stating, "Timber harvesting in our national forests should be limited to lands that will show a profit. Below-cost timber sales must be stopped." It is a local issue and people are very concerned about what is becoming poor forestry, a risky environmental action and a "dumb" economic and forestry investment with little potential for any type of return.

Cable sales that have been completed or are under contract on the Dixie National Forest are as follows:

Teasdale Ranger District

Sale Name	Tractor Volume	Cable Volume	Primary Species
Devil's Slide	.1MMBF	.5MMBF	Ponderosa Pine
Pleasant Creek	.6MMBF	1.1MMBF	Ponderosa Pine

Escalante Ranger District

Sale Name	Tractor Volume	Cable Volume	Primary Species
North Creek	8.4MMBF	.8MMBF	Ponderosa Pine
Hungry Creek	5.1MMBF	.7MMBF	Ponderosa Pine
Beck Springs		.6MMBF	Ponderosa Pine
Bear Creek	8.2MMBF	.3MMBF	Ponderosa Pine
Garkane	3.4MMBF	.7MMBF	Ponserosa Pine
Goat Camp	1.5MMBF	.4MMBF	Ponderosa Pine

Future Sales

You are correct that some of the future cable sales will come from what was called the "marginal component" in the most recent Timber Management Plan. Some harvest has always been calculated in the "marginal component". Future planned harvests include about four sales on the Teasdale Ranger District of which 1.3MMBF would primarily be ponderosa pine and 400MBF Engelmann spruce and subalpine fir. The Escalante Ranger District will probably offer two sales amounting to 1.5MMBF of mixed species (ponderosa pine, Douglas-fir, white fir). The Powell Ranger District plans to harvest or otherwise treat (use prescribed fire or a combination with harvest) approximately 1500 acres of "cable" ground. The reasons for these sales have been and will be to accomplish varied silvicultural objectives including treatment for a variety of insect and disease problems to restore these lands to a productive state. These lands, for the most part, have a moderate to high productive potential for the Dixie and are generally accessible. They are currently producing little volume because of their overmature condition and because of high incidence of insect and disease activity. Aspen harvest using cable logging systems is not planned as you suggest. It should also be noted that intensive forestry is not always a better economic investment than extensive forestry.

These errors have been corrected.

Below cost sales has been addressed as a "National Issue" and has been considered as an issue. The phrase "has not emerged locally" will be eliminated.

The discussion states the below cost issue is hazy due to the fact that timber sales will look more economical in the future at the "expense" of costly roads constructed now to access timber sales. It is implied these roads make sales below cost now and that maybe as the road network is finished sales in the future will not be below cost. Your own analysis discredits such a statement. It is clearly noted in the PNV charts, the alternative analysis comparisson charts and Alt. B output charts that timber looses substantial amounts of money every decade. This despite the fact that the plan and d. EIS also note the road system will largely be finalized within this decade.

The discussion also states timber sales produce other resources such as "dispersed recreation use, enhanced water yield, and wildlife habitat improvement." Again, the plan and d. EIS discredit each statement. The documents state correctly that demand for semi-primitive recreation will not exceed supply. Thus timber harvesting will not increase or better semi-primitive recreation. It may transfer recreation use--no new semi-primitive recreation is created.

However, semi-primitive non-motorized recreation (natural environments are lost and with this a specific form of recreation) is lost and the plan fails to note this.

The d. EIS and plan note the Dixie is the lowest water producer on the entire Intermountain Region. The documents further state the opportunity for water yield increase across the forest is "very limited." The documents go even further by stating an increase of 2% is postulated through timber harvesting but because of timber practices on the forest actual water yield increases over the long term will "drop" from a 2% increase back to "pre-project levels."

The documents note that most timber management would come under the Management Area 7A prescription. This does not emphasize any other resources but fiber production. Some timber management would occur in other prescriptions which would emphasize other values and timber production. However, most timber harvesting on the forest, as defined by the prescriptions in the plan, would be done with no other purpose in mind but too maximize timber volume production.

The point of this brief discussion is to show two major and serious flaws in this forest plan which cannot be overlooked. First, the plan is so generic that it rarely applies to what is on the ground within the Dixie National Forest. This section (below cost) was simply taken from Washington memo direction and it has absolutely nothing to do with the Dixie. It is time the Forest Service quit trying to fool and deceive the public. In every instance the plan itself reverses the discussion concerning the below cost issue.

Your statement that transportation systems are designed to access future volumes not harvested in the first entry is correct. All future benefits are subject to an appropriate discount rate which discounts the importance of pre-roading. The "fairness" of this approach is a subject of some discussion. The statement about completion of the road network in ten years refers to the Forest collector/arterial road system. This terminology refers to the fact that this system accesses larger areas for multi-purpose resource management and use.

Road costs alone do not create negative present net value. Purchaser road cost (local roads needed for timber access) are born by the purchaser along with additional logging costs, reforestation costs, brush disposal costs, and other cooperative work. Unless appropriated or public money is used to construct roads (seldom the case except for arterials and collectors) purchaser costs alone do not contribute to negative PNV's. PNV could be negative for timber in some areas where the Forest Service costs for preparation, administration, resource mitigation and improvement measures, timber contribution to land management planning, and office overhead are considered. They are accounted for in FORPLAN. Below cost sales are such because the total cost exceeds total benefits for the sale. Where the timber purchaser bears the cost of road construction reforestation, and other work these elements by themselves could not contribute to below cost sales.

Timber harvesting will increase semi-primitive motorized recreation opportunities by allowing for a greater density of people per acre. It is true that some semi-primitive non-motorized recreation opportunities will be lost. However, there will be areas available for this type of use after the planning period and there should be enough to provide for the projected demand. Timber lands cover 574,000 acres of the 1,884,469 acres on the Forest and of this only 43% is loggable. The small amount of timber land in relation to the total forest seems to indicate that many areas will remain unroaded after the timber has been removed.

Prescription 7A emphasizes wood fiber production, but also provides for the maintenance of the productivity of land, protection of cultural resources, reforestation measures, and other necessary mitigation measures as site specific conditions require. Other prescriptions allow timber harvest where it enhances or does not harm other resources, especially those emphasized in the prescription.

We acknowledge the generic nature of some portions of the Plan. This was driven by the need for additional site specific data and our ability to respond to a wide array of alternatives. However, we do not envision that all NEPA requirements are met with the issuance of the Forest Plan. We see the need for continued use of environmental analysis on all projects such as roads, timber sales and mineral entry. The Plan is specific and the standards and guidelines associated with each prescription do serve a specific constraints to activities that will take place where a prescription is assigned. Furthermore, the first decade is quite specific as to where timber harvest will take place. We also feel that Washington Office memo direction on below cost sales is appropriate for the Dixie National Forest.

Second, it is a hypothetical plan. What the document says and what the document shows have nothing to do with one another or the forest itself. It isn't applicable. Given the rapid change proposed in the timber program--going from ponderosa pine to aspen and spruce/fir harvests-- it becomes even more hypothetical. The simple matter of fact is the discussion is deceptive and is meant to justify an action that doesn't even exist on the Dixie National Forest. It is so substantial an error that it brings into question the credibility of the Dixie National Forest plan itself.

Another example can be found on page IV-35, d. EIS. Here the document states lumber, presumably from the Dixie National Forest, is important for community stability and home building. Get serious! The incredible reliance on aspen in this forest's timber planning over the next 5 decades isn't adding to America's home building. Other factors are at work as well and this plan fails to discuss any of those issues relating to the down turn in home building. Furthermore, the plan itself clearly states Dixie N.F. timber is only used locally. The plan should provide an analysis of how it is used and what end products come from the forest, both from the past and what is expected in the next 5 decades.

Community stability is a legitimate issue. Again the plan is illusory. Softwood sawtimber volumes are reduced condsiderably for the next 50-70 years because of overharvesting on the forest. Thus, to meet nondeclining yields, the forest has upped the volume projections by using aspen and low-value, marginal spruce/fir forest types. With respect to aspen, where demand is zero and not likely to ever reach the absurd projections in the plan, it is not likely local loggers will ever be able to replace ponderosa pine with aspen.

The plan states this, in fact, and then fails to roll the impact on local communities into the analysis. The plan simply assumes the total ASQ will maintain "timber community stability." It can't and you know it! Aspen is not going to replace ponderosa and the Forest Service is going to take the heat with respect to harvesting low-value forest species in areas of high public interest and environmental sensitivity.

Alternatives are also not skewed enough. For example, A & B are identical with respect to timber. Why did the forest let this happen? Of the remaining 6 alternatives, 4 increase timber ASQs. Only two reduce the ASQs. Rather pointedly, the plan maintains or increases timber sale volumes in 6 of the 8 alternatives. When you remove the absurd aspen constraint it is far different and reflective of the economic, environmental, policy and legal issues the forest must face.

The alternatives utilize, exclusively, even aged management techniques. No

We do not feel that timber program will be the same in ten years as it is today. The resource base itself is changing as are timber products. We agree the Plan is hypothetical, as is any future projection. The projections in the Plan graphically display the changes needed to maintain a level of timber harvest similar to the recent past. The plan is linked to what is happening biologically on the Dixie and is not a document that "displays one thing, does another and is not linked to the ground".

We feel the display of our ability to produce aspen is reasonable given industries inquiries on the subject. It must be remembered that the first decade 3.5 MMBF displayed in the plan is an annual average and could (in the event of a developing market) occur as larger harvests at the end of the decade. The volumes displayed in the second decade are not excessive and represent minimum requirements for a facility that processes aspen fiber into building materials.

All projections we have seen have shown the demand for wood products increasing in the future. Traditional wood products are becoming a thing of the past. Products that incorporate chipped or laminated wood are being developed that provide some superior construction qualities. Aspen flake board mills are currently producing products utilized in todays construction industry. It is our feeling that Nationally the market is growing for these products, locally the future is admittedly uncertain.

Dixie National Forest timber is processed locally. Processed timber in the form of dimension stock and mine props are consumed by local markets and shipped to regional markets in the Midwest, and Southwest, and as far East as Pennsylvania. Timber harvesting and processing contributes the bulk of the value added to the raw material. This arrangement benefits the local communities. Spruce and true fir are already being processed locally and as pine supplies taper off will probably command higher prices. Grading standards allow a small percentage of aspen to be included in sawtimber volumes. The plan states that no market currently exists for large amounts of aspen but at the same time does not discount trends in construction and demand for raw material which may make greater aspen harvest feasible.

We feel that the Forest has made adequate provisions for no harvest or compatible harvest alternatives in areas of "high public interest and environmental sensitivity". 142.1 thousand acres or 32 percent of the Forest land identified as capable of producing crops of industrial wood are identified as unsuitable in the Plan for these reasons, as well as economic considerations. A total of 373 thousand acres or 55 percent of all Forested land is identified as unsuitable in the Plan. This does not include additional areas where timber harvest would be constrained or restricted to varying degrees to meet other needs.

It was our intention to reflect the Forest harvest level of the Current Program Alternative "A" in the Composite Alternative "B". Lower ranges of harvest were displayed as benchmarks which included no harvest (minimum level benchmark) and the maximum PNV benchmarks. They were not carried forward as alternatives considered in detail. There is no aspen constraint in Alternative B. Aspen is brought into the solution by the nondeclining yield constraint, which we chose to include to reflect outputs and effects in future decades under current harvest levels. Aspen harvest or other treatment will also provide benefits to wildlife and future visual resources.

READEX FICHE

alternatives consider fire management as a tool to achieve some vegetation management schemes, particularly in the aspen types. In fact, there is no discussion of this as a tool to replace poorly devised harvesting scenarios on such low value species. Of the 8 alternatives all but one substantially increase aspen harvests in almost every decade! The alternatives simply do not provide the public with what NFMA, NEPA and the implementing regulations require with respect to showing a reasonable and effective display of alternate methods of managing all of the forest's resources under various schemes.

And furthermore, not many of the decisions in this section correspond to any public issues or concerns. There was no overriding concern to go to aspen or accelerate pine harvests because of a very localized pine beetle outbreak. There was very little concern to increase harvests.

The plan and d. EIS also state, typical of other forest plans, that higher harvest levels will have greater impacts on beetle infestations. There is no indication of how much more of an impact (mmbf saved and then utilized)or how activity now will impact future beetle problems since the plan is building a forest more susceptible to pine beetles due to homogenous size and age stands. How much less of a problem is the pine beetle under the non-market alternative or PNV benchmark than the preferred alternative? And furthermore, the issue is really moot because the emphasis in this plan is on spruce and fir, some mixed conifer and aspen. Disease problems are far different than pine beetle.

There exists little discussion on diversity and maintenance of old growth species. Why? The plan correctly notes the forest is inherently diverse. But the timber program's function is to reduce that diversity. How will that alter the physical structure of the forest, meet public issues and maintain a healthy forest ecosystem? Certainly, if the forest is diverse timber harvesting to achieve diversity is unnecessary.

There are no maps of timber sales, suitable timber lands or old growth regions to meet wildlife concerns. This is one of the few plans without at least a timber sale map. Also, it seems senseless to go through all of this planning jibberish and computer talk and not provide a map showing where timber harvesting will occur. This is important to understand the alternatives and the max PNV alterntatives.

We have already discussed the generic nature of this section. The same holds true for environmental impacts. There is no real discussion of timber harvesting impacts on the Boulder Top, Boulder Rim or other places where spruce/fir will be harveted. There is no discussion of impacts on Dixie National Forest wildlife with respect to timber harvesting. Everything is done

Uneven-aged management is not excluded as a viable option. Standards and guidelines for timber display uneven-aged management as a viable option in many situations. Small acreages of uneven-aged management are programmed in the Plan. The use of shelterwood management system is by far the most prevalent. The shelterwood system provides for a site continually occupied by trees, better economics than selection harvest, a potential seed source, and seedling protection without the disadvantages of perpetuating disease and damage during harvest operations. Uneven-aged management will continue to be used where it best meets the overall objectives of Forest Management.

Discussion of the use of prescribed fire as a vegetative management tool is made in the DEIS and Plan and was considered in the formulation of alternatives, additionally, the prescribed fire discussion will be strengthened in the documents. The Forest is presently expanding the use of prescribed fire. With increased experience more burning in timber stands for disease sanitation and stand replacement is anticipated. However, aspen stands on the Forest are virtually fire proof and could be treated only during periods of extremely high fire danger. This severely hampers our ability to use fire as a tool in treating aspen.

Plan direction should not increase the pine beetle problem on the Dixie National Forest. Homogeneity of stands is not the cause of increased susceptibility. High stocking levels and low tree vigor are most related to increased susceptibility. Ponderosa pine, being relatively intolerant to shade, is most often found in even-aged stands. Fire history, infrequent seed production, and moisture regimes often create even-aged stands far larger than those found in managed forests. Proper management imitates natural openings for regenerating pine stands and additionally limits stand size and controls stocking to minimize problems with the pine beetle. Old growth remnants are left to provide snag habitat for cavity nesting birds.

It is difficult to predict increased mortality caused by the pine beetle from one alternative to another. Modeling tools are being developed to increase predictive reliability. To date, we do not have the ability to give exact estimates. The Non-Market Alternative provides about two thirds of the harvest level and less than 8 percent of the timber stand improvement (thinning) that would occur under Alternative B. It would be reasonable to assume that losses due to pine beetle would result in periodical epidemic levels similar to those experienced in the recent past. Alternative B would result in reduced yearly endemic mortality and a possible savings of 100 MMBF in epidemic losses during a 120 year rotation. These estimates are based on 70,000 acres and 1500 MMBF/acre losses. In reality, such a pine beetle epidemic would occur in pockets with light activity elsewhere. Some stands would be almost entirely affected while others would sustain little mortality.

The Forest is very diverse on a large scale. On a drainage by drainage basis, however, there exist many opportunities for enhancement.

Ten year sale map sent.

from the generic--soils will be lost, water will be polluted, wildlife will be impacted. How? Where? Over what time frames? Is there sufficient cover for wildlife outside of timber harveted areas? Will that exist in 10 or 30 years if extensive mineral development also occurs? This is where the Dixie plan fails!

Our concerns are summed up actually in the plan itself, page IV-27, d. EIS. Here it states quite clearly that each alternative will result in "improved stocking levels and stand age distribution." However, the plan fails to clearly describe why Alt. B is any better than Alt. E, as only one example? What does it accomplish that Alt. E doesn't? This is a particularly valid question given the concerns we have raised in this discussion. Why Alt. B?

The answer is disguised if there is an attempt to justify the recommendation. In the face of memo/policy direction from the Department of Agriculture to tighten the economic justification of marginal value (economic and silvicultural) timber harvesting, this plan darts in the other direction. There is no economic discussion or justification of the program. Instead of searching for good economic and forestry investments with respect to timber the forest moves to aspen and high elevation spruce and fir (both being very low quality). Why? To cover an obvious overharvesting situation in the pine belt. The plan gives no indication the pine beetle infestation was substantial enough to warrant an acclerated harvest. But the plan relies on this logic to justify maintaining harvest levels on the forest even though the predominance of the volume will not come from pine species.

It is a program that appears to be without direction and rather stumbles about contradicting good sense and good forestry. It certainly does not meet the public issues and concerns expressed in the planning process.

Two final points. First, is the marginal component (LUC) of timber as defined in the plan and d. EIS in the unsuitable category? The plan is not clear on this point. If not, why? For the past ten years it has not been harvested, as noted in the plan, because of "excessive development costs", "excessive regeneration costs" and a host of other constraints. What caaued the change if, indeed, it is now within the suitable category.

Second, Table BII-2 shows a No Harvest prescription for management areas 1A, 1B, 2A, 2B, 4C, 5B, 9B and 10A. However, the standards and guidelines show only 10A and 1A as prohibiting harvesting?

Our recommendations flow from this discussion and are quite evident. Aside from reworking the entire section to make the plan meet the NFMA planning requirements and other policy and public concerns, we make these suggestions:

We feel much of the information on environmental effects are contained in plan (DEIS, Chapter 4). We did not address specific projects beyond the first decade. We anticipate that this type of information will not be available until environmental assessments are prepared on the individual projects.

For timber, Alternative B provides the highest sustained capacity, least susceptibility to serious incidence of insects and disease outbreak, and best addresses the needs of communities dependent on timber industry when balanced against environmental and economic concerns.

The accelerated harvest in the ponderosa pine type was a conscious decision to salvage insect mortality and manage high risk stands to prevent additional insect losses. Proper management practices in all forest types will avoid the need for such "reactive" measures in the future.

The Dixie is continually exploring ways to both improve timber management practices and reduce costs. We feel that cost and benefit values in the Plan (as projected from historic values) are quite conservative. In some instances, they reflect higher cost than we are presently incurring. This is complicated by an accounting system which is charging costs to timber management which solely benefit other resources. Every effort has been made to base growth, defect, cost, and volume estimates (to reflect recent harvest) on a sound and realistic basis.

The old LUC does not compare with the timber suitability classification required by Forest Service Regulations. The old marginal classification did not define suitability, but a characteristic of the land, mainly requirement of cable logging systems or other higher than normal costs. These classification were made in a somewhat arbitrary manner.

There were 193,000 marginal component acres in the old Timber Management Plan. Under the Forest Plan, 44,200 acres that probably were classified as marginal are classified as suitable for timber harvest. Much of the marginal was removed from the base because of the possibility of irreversible resource damage occurring. Under the old Plan, the marginal component was incorporated in the allowable sale quantity.

Recently, cable sales on the Dixie National Forest have been primarily in the ponderosa pine type on the Escalante and Teasdale Ranger Districts. Under the old classification, these sales would have been in the marginal component.

Table B II-2 simply displays the choices allowed the FORPLAN model for the prescription areas which were mapped by the Management Team for each alternative. Prescription Areas 1A, 1B, 8A, 8A2, 8A1 9B, and 10A were not incorporated in FORPLAN volume calculations. On the ground, Prescription Areas 1B and 9B would permit a small amount of timber harvest, if they enhance the emphasized resource. For example, 1B would permit harvest to widen a ski run or remove hazard trees.

A—Harvesting softwood volumes should be reduced to the levels in the non-market emphasis. This gives consideration to both the local mills that do utilize forest timber, further minimizes the below cost issue and meets Dixie National Forest ground constraints far better than higher levels of harvesting. All of the forest resource uses benefit from this alternative and as the document notes stand and age structures are improved. Most of all, with fewest impacts this forces the agency to utilize the most efficient timber to build harvest levels around. That should be the goal of one of the driest forests in Utah and one of the forests with the lowest overall site quality. Harvesting should occur only on those lands of medium site productivity(some 29% of the forest).	The non-market alternative least meets the needs of Forest management in terms of forest age structure, insect and disease management, and stocking levels. In addition, the alternative does not meet the needs of communities dependent on Dixie National Forest timber.
B--Hardwood harvests should be reduced to the average 15 year volume. This would allow you to program some 350 mbf of aspen. The reasons are exceedingly obvious.	Should markets fail to develop your solution of 350 MMBF per year could occur by default. For reasons stated previously, burning is of limited potential as a management tool. Additionally, given a market, aspen economics are potentially sound.
C--Fire programs should be utilized to control pine beetle on areas not accessible by logging roads. Only those areas under management now and accessible should be considered for harvesting with the intent to minimize beetle infestations. The reason agai is obvious. This is far cheaper and quite likely will result in a stand and age diversity showing the mosaic necessary to minimize the beetle-preferred trees in the future.	The role of prescribed fire is expanding on the Forest. Our intention is to use fire as a management tool where it best meets resource objectives. Fire in many instances could promote beetle activity.
D--No unroaded areas should be harvested or roaded. This is again in response to "going after" the higher quality sites, the sites with fewer constraints (access), and is responsive to a broader perspective of public isssues.	Few unroaded areas are impacted in the first decade. Opportunities for unroaded recreation and wilderness will be evaluated in the next round of planning.
E--What little aspen management is needed should come through fire programs. Again, we refer you to the aspen symposium. This is far more valuable to wildlife, which aspen management is often founded upon in this plan.	We have limited potential for the use of fire as a management tool in aspen. Research shows that failure to treat aspen clones can actually lead to reduced vigor of the succeeding stands. Use of a helitorch might hold some promise but no economic advantage would result.
F--Maps should be provided to show where sales will take place, where old growth will be left, both in large blocks and surrounding timber sale areas, and showing where the suitable timber exists on the forest.	This would be a monumental mapping job.

Range

The range portion of the plan/EIS is better than many other forest plans in its economic assumptions and in not overallocating the range resource from current capacity. Nevertheless, these positive points have been confused in the body of the plan and need clarification. The *lack of the AMS* has limited the scope of these comments and consequently, there is no background for the information presented in chapters II and III of the EIS.

The basic question concerning the range resource that must be answered is *does the present forage allocation treat wildlife (both terrestrial and aquatic), recreation and watersheds with equal consideration as livestock?* A quick reading of the plan does not give a definite answer. However, a comparison of wildlife numbers and riparian condition answers an unfortunate NO to this question. The allocation of forage and equal consideration of other multiple uses must be the goal for this forest plan. The plan and EIS both note the increasing importance of recreation and wildlife (called amenities) and the decreasing emphasis on commodity production. This is due to the increasing population in Utah, particularly Washington County, and in the populatiuon centers of Las Vegas and southern California who recreate and use the Dixie National Forest for other than timber/range/mineral production.

Currently the forest provides 115,000 AUMS of livestock forage for 20,000 cattle (plus calves) and 25,000 sheep (plus lambs). However, only 1200 - 1300 elk use the Dixie National Forest, 68 pairs of goshawks and 4,000 Bonneville Cutthroat Trout. These examples point to the problem of a lack of equity in allocating forage and in determining importance between wildlife and livestock. It is not disturbing -- it is absurd. Domestic grazing is a dominant use and concern for wildlife, the natural inhabitants of the forest, is minimal.

The array of alternatives for grazing is not sufficient. The problem is more than one of simple arithemetic -- the alternatives show 115, 115, 110, 115, 90, 117, 119, 122 MAUMs for the respective alternatives. As can be seen the array is not diverse and is is tightly grouped around the present allocation, however, that is not the only problem. Alternative H has more AUMs allocated to livestock the first three decades than does the maximum range benchmark. This "glich" is very confusing. Yet the biggest problem with the array also involves the credibility of the figures presented in chapter III of the EIS. The high production alternative is only 7,000 AUMs greater than the current permitted number (the same number selected for alternative B) and current capacity. This indicates the range may not be in as good as condition as the chapter would suggest if only

Although the allocation of forage to wildlife was not discussed at length in the perusal of the wildlife appendices of the AMS (specifically the habitat capability work sheets) demonstrate the allocation of forage to wildlife. A sheet has been completed for each deer herd unit on the Dixie showing AUMs allocated to livestock. AUMs presently available to wildlife, and the number of additional AUMs available. In no case are the additional AUMs allocated to livestock; they will be made available to wildlife.

See table IV-5, pg. IV-15a & 15b (EIS). The table shows increases in most of these species.

The laws and regulations that established the Forest Service planning effort require a consolidation of all resource plans and management schemes into the "Forest Plan" framework. The exception to this are the Allotment Management Plans (AMPs), which are to remain a separate entity. Because of this direction, the range of livestock grazing alternatives was typical of most other resources. However, the impacts of a well managed livestock allotment will be compatible with the Forest Plan.

The benchmark analysis of the market and non-market resources looked at the extreme range of management options for all resource uses. The Forest management plans projected livestock grazing within their maximum range benchmarks, and well within the land's capacity base as identified by range analysis for grazing allotments. Livestock grazing harvests annual forage crops that cannot be stored or stockpiled. Term permits for livestock grazing are existing management obligations. Grazing permits have long term effects on local and regional economics and politics. The generally narrow range of alternatives regarding livestock grazing is primarily the result of existing commitments and economic and environmental considerations.

Forest Service Manual and Handbook directions and standards, guidelines, and monitoring of the Forest Plan, will provide that livestock grazing will be maintained within the capacity of the lands. If imbalances occur, provision is made for adjustments as needed in livestock grazing to meet the objectives of the Plan.

You correctly located a "glitch" in the Max. Range Benchmark and the Alternative H output tables. This was a typographical error. Both alternatives should have the same numbers in the first three decades.

7,000 more AUMs of forage, increasing it from 115,000 AUMs to 122,000 AUMs, can be earmarked for livestock in the first decade by a program of high intensity range improvements and decreasing forage for wildlife. This also points to the grossly inequitable condition that presently exists between wildlife and livestock forage allocations. Even the Non-Market Alternative favors livestock in its forage allocation.

The trend and condition figures on page III-23 raise some other questions. The amount of good condition range is equivalent to the amount of range in static condition. Does this constitute the same parcels of land? The acreage in fair and poor condition is the same as land in an upward trend. Are these the same tracts of land? It is indeed curious the numbers correspond so perfectly. Is any land on the Dixie in excellent condition? If not, why not?

Another problem concerns riparian areas. The EIS (page III-35) notes the poor condition of riparian areas due to "overuse by permitted livestock." However, page IV-39 of the EIS indicates riparian areas would remain static or increase in condition under the alternatives A and B (current program and preferred). It is virtually impossible to have an overused or overallocated area remain static or improve over the long run. This inconsistency in the plan leads to the real problem facing riparian areas on the Dixie. We are told in the EIS that alternative B will follow the exisitng situation regarding grazing and riparian areas (see chapter II). Yet the maps show grossly different areas for riparian management under the two alternatives. What changes will take place with respect to grazing in riparian areas? This is not spelled out in the plan and we are given contradictory information concerning riparian areas and their management.

These inconsistencies are in part due to the noncompliance with the March 29, 1985 memo to regional foresters from Everett Towle. The plan fails to adequatley discuss the relationship between permitted use, actual use, current and potential capacity. Although all these figures are included, there is no discussion to their interrelationship nor is their an explanation about how the allotment management plans fit into the forest plan. We are told all AMPs have been completed and implemented (EIS, page III-22) and one would assume no more work is needed. However, this again raises the question about how riparian areas will be improved and what areas are actually improving in trend.

The biggest problem of the non-compliance with the March memo is in chapter 4 (see the memo, requirement 3). The environmental impacts of ther various alternatives are not adequately addressed. For example, wildlife impacts are noted as, "In general, the larger the number of

The "Excellent", "Good," "Fair", "Poor" range analysis rating system is based in part on forage production and impart on ecological condition of the site. Included in this is Vegetative Condition Rating, which is derived from a Plant Composition Rating and a Forage Production Rating; and a Soil Condition Rating, which is derived from a Ground Cover Index and a Current Erosion Index. The actual Condition Class Rating is either the Vegetative Condition Rating, or the Soil Condition Rating, whichever is lower. An area could rate "Excellent" (rating greater than 81) as far as vegetative condition, but if for some reason it rated "Poor"(rating from 20 to 40) on the Soil Condition rating scale, the area as a whole would be rated in Condition Class "Poor".

Regarding your inquiry about range trend, we are confident, from data collected on annual allotment inspections and from permanent range trend studies, that there are no suitable acres in a downward trend. We have conservatively placed all the acres in the "Good" condition class in the "stable" trend category. Some of these acres may in fact be in on upward trend, and if the Range Allotment Analysis data were updated today, we might have acres in the "Excellent" condition class.

An important part the Monitoring Plan for the Preferred Alternative is inventory work in reparian areas. We are familiar, in a general way, with all the riparian areas that need improvement. In many cases we are lacking specifics such as: the stream reaches needing improvement; what type of improvement is needed? (is structural work called for, or would a change in grazing management be sufficient?); is vegetative work needed? If so, what plant species are indicated?

One such effort is already underway; in the East Fork of the Sevier River and its tributaries (see Plan, pages B-8, 9, 10). This project will span at least the next 10 years and includes extensive inventory work (2 years have already been spent collecting data) to specifically determine problems and possible solutions. Solutions will include, but are not limited to: modification of grazing management plans, long-term rest of certain pastures, and fencing of some riparian areas. The East Fork improvement project is the first, and probably the largest, aquatic and riparian habitat improvement project to come on line. It is a high priority with Utah Department of Wildlife Resources and we expect cooperative funding from them. The project is also receiving regional and national attention. As work proceeds on this project we will start work on similar projects in other drainages.

As discussed in the DEIS, all allotment management plans (AMP) are completed. To assume that no more work is needed is incorrect. As with any worthwhile planning document, AMPs are dynamic and will be updated periodically. The Forest Service Manual does not specify a planning cycle for AMPs. Logically, they should be updated as often as the Forest Plan; about every 10 years or more often if annual allotment inspections and range trend studies indicate the need.

Your point about the Towle Memo is well taken. A brief discussion of the relationship between actual and permitted use and between current and potential capacity will be included.

Additional narrative and a tabular display addressing this comment has been added on IV-25, EIS.

livestock using the Forest, the smaller the wildlife populations will be." This "generality" does not analyze impacts to wildlife under the various alternatives. What are the current impacts to fisheries in riparian zones and what are the anticipated impacts from the various alternatives? What are the impacts to elk from livestock grazing (particularly cattle) and where do they exist under the current condition? What are the impacts under the various alternatives? What impacts will result from domestic sheep grazing and desert bighorn sheep in the upper Escalante drainage (both Steep Creek and Sand Creek/Death Hollow) because of expanding herds in Capitol Reef National Park and the lower Escalante? What are the impacts, both current and projected, upon predators under the various alternatives?

Again, the discussion of riparian areas is incomplete. We are told on page IV-24 that grazing causes impacts to riparian areas. We are not told the extent of the current problem nor are we told what will occur under the various alternatives.

One bright point in the plan is the valuation of an AUM of forage shown on page BII-102 of the appendices. This number is the value of an AUM of forage, $5.80. This is the number that should be used throughout the ecomomic analysis of the range resource. Most forest plans have used grossly inflated figures in the $11 to $13 range. However, the EIS confuses the issue by noting on page III-24 the value of an AUM of forage is $8.06. The $5.80 figure is much more accurate as it reflects the values (appraisal values) shown on page 29 of the 1985 Grazing Fee Review and Evaluation Draft Report. Even that figure is high as the 1982 figure for the two pricing areas encompassing the Dixie National Forest would be about $5.25 (an average between the $4.91 and $5.58 figures given for 1982 on page 29 of the report).

The economic analysis falls down in the benefits and costs listed in chapter 2 of the EIS. The benefits listed on page II-16b are grossly inflated. Using the figure given by the Dixie in appendix B, the benefits of range would be $667,000, not the $927,000 figure noted on page II-16b. The net benefits should be $177,000 or $113,750 (using the $5.25 figure). The benefits are not the inflated $437,000 or the $811,000 listed on page II-16c. Using the receipts from range permits, the net benefits from range would be negative. The point is these economic inconsistencies must be rectified and the true value of the range resource shown, not the inflated figures given in chapter II.

We would suggest some important changes be made in the range portion of the plan. The standards and guidelines on page IV-36 and 37 of the plan

Serious errors were detected in the mapping of riparian management areas (Prescriptions 9A and 9B) in the draft Land and Resource Management Plan. These errors have been corrected in the final LRMP Based upon the comments received on the draft LRMP, Forest Management has re-evaluated the riparian area management prescriptions, particularly as they regard riparian area condition and grazing management. The lack of information currently available on the condition of riparian areas across the Forest is an impediment to the effective management of these important resources. To rectify this situation, an accelerated multi-disciplinary riparian area condition inventory is proposed for implementation within the first 5 years of the planning period. Information on impacted riparian areas acquired in this effort will be used to develop riparian area management plans addressing specific measures needed to improve a degraded area. This approach recognizes that there are different factors contributing to the condition of any particular degraded area. These problems require careful site specific evaluation to develop effective measures to induce recovery.

Grazing management policies in riparian areas geared primarily to Forest-wide forage utilization levels restrict the land manager in implementing innovative livestock management techniques which may provide more effective means to maintain streambank stability, riparian vegetation and other factors commonly impacted by livestock. Nor do they recognize the differences in productivity, stability, vegetative structure and response to grazing that occur among the riparian ecosystems found on the Forest. A more site specific management policy is proposed for livestock grazing in riparian areas.

Forest Service policy recognizes that riparian areas are "among the most productive, sensitive, diverse and often most geographically limited ecosystems within National Forest lands". These areas are capable of supplying a wide range of high quality resources if properly managed. Where resource management activities result in tradeoffs, a careful evaluation is required to produce a proper mix of resource outputs. We recognize that because of the tradeoffs necessary in multiple use management of riparian areas, some resources will not be produced at their maximum potential. However, we do believe that the resource output goals of this plan maximize the net public benefit derived from riparian areas. At the same time, it provides for the maintenance of healthy riparian ecosystems, protects water quality and water delivery related values, and allows for the recovery of currently degraded areas.

The confusion here is caused by inflation factors. The $5.80 is the value of an AUM in 1978 dollars. We were required to use 1978 dollars in the economic analysis. The $8.06 figure is the value of an AUM in 1982 dollars. We were required to use 1982 dollars in calculation of Benefits, Receipts and Cost.

should be changed to reflect utilizations of forage on wet meadows as 50%, not the 60% figure given in the plan. Use over 50% is too heavy and does not give the resource adequate time to recover. Also, there should be no heavy use pastures with 60% utilization of bunchgrass. The figure should be, at most 50%. A better figure for most ranges would be a 40% utilization. Critical wildlife habitat including winter range, birthing grounds and critical summer areas should not be grazed by domestic livestock. This could include important roadless areas where wildlife seek seclusion such as the Mt. Dutton/Adams Head roadless country which is critical for elk. And finally, a standard that must be adopted is one which all ranges see improvement including good ranges. Presently, there is no excellent condition range on the Dixie. A standard should be adopted that returns all of the range on the Dixie to good or excellent condition (a 50/50 ratio) by the end of the planning cycle in ten years. A static condition for range classed as good is not enough. Some range on the Dixie must achieve excellent condition class.

In areas with season-long grazing we would agree with your figures of 50% utilization. On the Dixie, however, we have no season-long grazing. All of our allotments are on a deferred rotation or rest rotation grazing system in which areas are grazed at a different time each year or receive a full season or more of rest between each utilization. Under these circumstances, we feel that our utilization standards are acceptable.

Wildlife

This is one of the most important resources on the Dixie National Forest. Then forest plan has partially recognized the public's interest in wildlife by placing it as an issue (plan, III-3). However, 4 of the 14 issues/concerns identified by the public deal with wildlife and its importance (AMS). The Forest Service also recognizes the increasing demand for non-consumptive and consuptive recreational "use" of wildlife in the forest (plan, pages II-2 and 21).

Nevertheless, the recognition in the plan of this significant public concern for wildlife has not had much of an influence. Currently wildlife numbers are well below potential (see page III-16a) and there is an inequity between wildlife and livestock. The array of alternatives is disturbing from the wildlife standpoint. For example, under no alternative do elk numbers increase to the UDWR 1990 objective of 2,900 even after 50 years! Ironically, the 1980 RPA goal is identical to the UDWR goal. Under no alternative do goshawks reach their maximum potential (compare EIS pages III-16a and IV-15a and b). A further problem was created by the lack of detailed explanation why reaching the UDWR goal was not considered. We realize the Forest Service may have valid reasons for not doing so but the only response (given on page IV-20) is, "Elk numbers as high as 2,900 elk would conflict with other resource activities on the Forest." How would elk numbers conflict with other resources? What resources would be lost? What are the significance of these resources from biological and/or economic standpoints and how do they compare with the wildlife resource? An alternative should be developed in which the conflicts are decided in favor of the elk. The Forest Service admits on page IV-24 more livestock mean fewer wildlife. Why can't equal amounts of forage be allocated to wildlife and livestock? The lack of "balance" in the alternatives is unacceptable.

There is no irony in the RPA and Utah Department of Wildlife Resources goals. Until the elk management plans are completed, there are no firm elk goals for the Dixie herd units. The RPA numbers were created with input from Utah Department of Wildlife Resources. When herd unit goals firmed up, they will be incorporated into the plan and we will strive to meet them.

The impacts to wildlife noted in chapter IV further underscores the nonexistent array of alternatives. For example, page IV-14 notes aquatic habitat declines under all alternatives due to accelerated eutrophication and impacts of other resource activities. Page IV-15 states, "The Only (sic) alternative that closely approaches maximum potential populations is the Non-Market Alternative...Maximum potential populations of resident trout, Bonneville cutthroat trout and macroinvertebrates would not be reached under any alternative...The Non-Market Alternative provides the best mix of habitat diversity and habitat effectiveness." Clearly, only the Non-Market Alternative provides wildlife with essential elements needed for healthy populations and even that alternative does not meet certain goals for wildlife. Only the Non-Market Alternative has positive effects upon bald eagles, threatened and endangered plants and sensitive plant species.

The eutrophication problem to which you refer is in Panguitch Lake. The majority of the excess nutrients which are entering the lake are coming from private lands over which we have no control. Other problems contributing to the eutrophication, such as a poorly designed outlet works are not under Forest Service control. We have in the past, and will continue in the future, to work with landowners and water users to control and correct the Panguitch Lake problems.

The NFMA does not charge the Forest with maintaining maximum potential populations of wildlife species. It charges us with maintaining minimum viable populations of wildlife species. As you will note from Table III-13 on page III-16a (DEIS) and Table II-13 on page II-15a (Plan), the acres of habitat provided in 2030 are considerably above that required to support minimum viable populations.

The plan/EIS ignores certain wildlife species altogether. Bighorn sheep are returning to former habitat in the upper Escalante drainage from reintroductions in Capitol Reef National Park and the lower Escalante River and they were recently spotted near Tropic (telephone conversation, Dixie National Forest 1/8/86). The final plan and EIS should discuss this important species.

Neither bear nor cougar are mentioned in the wildlife section of the plan. These animals are of high interest and should be management indicator species (MIS). They are sensitive to disturbed environments (they are eliminated in developed areas where they conflict with human use) and are excellent indicators of the health of the natural forest. Thus, they would be prime indicators to see how much disturbance was occurring in undeveloped roadless areas, what effects grazing is having on the forest and the effects of timber harvesting in undisturbed areas. The AMS notes the Dixie National Forest has significant populations of mountain lions. Also, the mountain lion study being undertaken in the Escalante Ranger District is another good reason this animal should become an MIS (see AMS).

We have some concerns regarding some of the MIS chosen for the Dixie. Page III-15 notes wild turkeys may need periodic transplants to maintain populations. We have been under the understanding this species is native t the region. If turkeys are native to the Dixie, why are transplants needed? If not, why were they selected as an MIS since they would only indicate the severity of winters, something beyond Forest Service management? Also, turkeys are dependent upon old growth ponderosa pine. Yet the Forest Service has intensified the harvesting of this species. Is it likely habitat has been so severely eroded by timber harvesting the cover needed to survive winters has been eliminated and the species is under serious stress? What has the Forest Service done to the habitat that would make a native species unable to survive the winters?

Deer have been selected as an MIS because of the interest in the species. However, it should be remembered they are essentially a seral species an are not good indicators of the health of an ecosystem -- they live in our backyards in the winter. The EIS notes on page III-14 that, "Mule deer are valuable as management indicator species because the distribution of forage and cover and other habitat factors required to maintain healthy deer populations will also insure provision (sic?) of the habitat. requirements for many other wildlife species." What are these other wildlife species?

Although the use of wildlife fish and user days (WFUDs) is one of the only ways the Forest Service has to determine wildlife demand, to show

Big horn discussion will be included.

Our Management Indicator Species have been selected for sometime, and represent an adequate variety to insure proper wildlife objectives.

Turkeys are not native to the area. The monitoring plan will take into account the severity of winters and effects of disease on the populations. Turkeys are an important Management Indicator Species because: 1) they will indicate (when the above factors are taken into account) quality and extent of old growth ponderosa pine and 2) they are a high interest species.

Any terrestrial species which has relatively broad habitat requirements similar to the mule deer; i.e. Forest grouse, snowshoe hare, mountain lion, black bear, blacktail jackrabbit, cottontails, etc.

increases in wildlife emphasis and to evaluate the wildlife program in general, it is difficult to determine the trade-offs between wildlife and other resources based upon WFUDs. There is no direct correlation between WFUDs and the health of wildlife populations on the Dixie National Forest. For example, the EIS notes on page IV-20 that, "Alternatives which provide for high WFUD outputs also have the potential of causing resource damage from rutted roads, unwanted roads, damaged facilities, increased poaching*, etc." The simple matter of fact is activities which impact the surface (roadbuilding, timber harvesting and mineral development) will have negative impacts on wildlife. These alternatives *may* provide big WFUD numbers but that does not mean wildlife habitat is healthy -- these extra user days mean nothing. Any other evidence must be documented. The September 1985 USFS report, Wildlife Management Implications of Petroleum Exploration and Development in Wildland Environments, clearly notes negative impacts from development to wildlife.	The statement you quoted indicates that we realize that development impacts wildlife.
The WFUD charts also create confusion in the number of WFUDs available. The number on page IV-18a which shows about 22,000 (Composite Alternative) WFUDs and the chart on page II-52c shows about 18,000 WFUDs per year. Why is there this discrepancy?	The table and the graph are not directly comparable.
Another major problem is the whole issue of diversity. The EIS claims on pages III-16 and IV-16 that diversity can be "induced" through land disturbing activities. However, the EIS admits eatler on page III-16 that, "The Dixie National Forest is an inherently diverse area." Also page IV-15 notes, "The Non-Market Alternative provides *the best mix of habitat diversity* and habitat effectiveness." (Emphasis added) Clearly, the Dixie National Forest is already diverse forest, ranging from 2,800 to over 11,000 feet. The alternative that does the least disturbance (manipulation) provides the best diversity for wildlife, no doubt due to the fact that the forest is already diverse and the Non-Market Alternative would place wildlife on a more even plane with livestock and timber allocations. Also, the chart on page III-18 is confusing. How was optimum determined and for what wildlife species was it determined?	We have areas on the Forest where large expanses of even-aged vegetation (aspen and spruce-fir are examples) are found. This may be the result of fire, disease, or past land management. Selected manipulation within these areas will improve diversity on a localized basis. Information on optimum percentages in the various successional stages was gleaned from personal experience of biologist (USFS and UDWR) familiar with the area and from various literature sources. A complete bibliography for the Forest Plan and EIS will be provided in the final documents.
Another problem with the diversity discussion involves the spruce-fir type (see page III-16). The plan/EIS admits that timber stands are scattered on the forest and notes on page III-16 that the spruce-fir is in, "...uneven aged stands..." which are, by nature, diverse. Cutting in uneven-aged stands, with even aged management practices, does not add to the diversity of the site! It is already diverse and even aged management will only make it less diverse! That is precisely why the Non-Market Alternative is best for wildlife.	You should reread the discussion on spruce-fir on page III-16 (DEIS). Our use of the term "uneven-aged" may be confusing you, and is probably not technically correct. To elaborate more; spruce-fir stands on the Dixie vary from two-storied stands of two age classes, each of which is even-aged, to stands that are truly unevenaged, i.e. trees of at least three different ages are randomly intermingled. As III-16 correctly (according to our timber stand inventory data) points out, many of these stands have a very sparse understory, which makes them of limited value to many wildlife species. Carefully planned vegetation manipulation, using timber harvest, prescribed fire, etc. will enhance these values. If we were planning this sort of manipulation on every acre of the spruce-fir type, your comment about making it less diverse would certainly be true. This is definitely not the case, however.
The plan and EIS do not discuss, in any detail, the importance of	

non-consumptive wildlife use. The EIS notes the importance of hunting and fishing use (see pages III-6 and 20), yet little mention of non-consumptive use. Is non-consumptive use increasing and is it increasing at a different rate than consumptive wildlife use? By mixing the two uses, it is hard to tell where the demands for wildlife come and at what levels.

One of the failings of the plan is the lack of analysis from loss of wildlife cover, particulalry thermal cover, the timing of surface disturbing activities and the geographical constraints of the management indicator species. We have already detailed a problem concerning thermal cover with the wild turkey MIS. Since the Dixie is very diverse, geographical constraints on MIS vary from district to district and area to area. Yet the most important aspect of geographical constraints of MIS is the differing levels of surface disturbing activities on the forest. The wild turkey, an indicator of old growth ponderosa pine, is found on all the districts of the forest. However, the Escalante Ranger District, the Paunsaugunt Plateau and the Markagunt Plateau have seen heavy harvesting of timber. The MIS for old growth, such as turkeys and goshawks, do not really reflect the health of a forest if they are found only on the Pine Valley Mountains. If old growth species occur in low numbers elsewhere, those populations should be noted and given special consideration.

You have hit on the real value of Management Indicator Species. If those species (old growth such as turkey or goshawk) occurred on the Pine Valleys or Ashdown Gorge or Box-Death Hollow, we would have a serious problem. The fact of the matter is, our old growth MIS are well distributed. Our Monitoring Plan will assure that they stay that way.

It is obvious from reading the plan/EIS unroaded areas are of utmost importance to wildlife. In fact, the few undisturbed areas are likely the only place(s) where certain species are found. The value of these areas for wildlife cannot be overstated and their protection is essential for healthy populations.

In addition to the suggestions noted above, we submit the following suggestions for inclusion in the forest plan. The Non-Market Alternative is the best for wildlife. Livestock forage allocations, at a maximum, should be the numbers in this alternative (90,000 AUMs). Critical wildlife areas (winter range [5A and 5B], birthing grounds and crucial summer ranges [including some 4B, 4C areas and all 9A, 9B areas]) should be closed to ORVs and should have no livestock grazing. Many of these areas are also unroaded (see the Unroaded section of this comment for more information). These same areas should not be open to oil and gas leasing unless a strict No Surface Occupancy stipulation is applied. These areas, particularly 4B, 4C, 5A, 5B, 9A and 9B should not be open to timber harvesting (Note: area 5A has no silvicultural prescriptions, probably because it consists mainly of woody browse species). The thermal cover and escape cover is too important and the riparian vegetation too critical for aquatic and terrestrial species. Vegetation manipulation for wildlife, if it is needed, should be accomplished through the use of fire. This is particularly true for unroaded areas. These suggestions should be incorporated in the standards and guidelines.

Alternative E is best for wildlife. You must remember, however, that the Forest Service is in the multiple use business. Areas defined by Utah Department of Wildlife Resources as critical winter ranges or fawning/calving areas will be off limits to ORVs at the critical season. Livestock grazing, if it occurs will be monitored carefully. The 4 and 5 prescription areas are wildlife emphasis prescriptions. Any timber harvest in these areas would be done to benefit the wildlife resource. Timber harvest in areas with a riparian emphasis prescription is unlikely. No oil and gas activity surface would be allowed within areas delineated by Management Indicator Species as critical habitat.

Minerals

We find this section far too generic and simplistic. Rather than *plan* for mineral development it seems a conscious effort not to plan. It is totally reactive to the industry. Both Forest Service regulation, statute and case law plainly state the Forest Service has the responsibility to act on the public's behalf and the values of the surface administered by the Department of Agriculture. This is not a reactive position. The agency has the obligation, by law, to determine where the appropriate mineral development zones should be on the forest and how they should be administered, regulated, prohibited and managed. Any other interpretation flies in the face of your responsibility to public land management.

The plan fails to address where or to what extent the impacts of mineral development will be on the forest. This lack of planning is displayed in the assumption the Forest Service does not determine which areas are capable of mineral or energy production (III-37, DEIS). While it is true the Forest Service cannot determine what areas will produce minerals, it can and should determine what areas are better suited for production of other resources. The Forest Service has the obligation and responsibility to determine where mineral leasing should not take place, where it should be constrained by no surface occupancy stips, where it should be severely stipulated by season or type of access and where it should be allowed with standard stips. In this way the forest determines where impacts will occur and what the impacts of mineral development will be. It is totally unacceptable and a substantial error that the Forest Service is giving industry free rein in deciding where on the forest these impacts will occur.

The complete lack of an array of alternatives is very disturbing. The DEIS states "Minerals activity and oil and gas production would remain about constant through the planning period under all alternatives." Why? How can the non-market alternative produce the same management array as a market alternative? We want a clear and concise answer. Simply put, the DEIS and plan provide no alternative for minerals management and hence for the Dixie National Forest.

But the plan and EIS also fail in disclosing environmental impacts to the surface. This is largely justified by saying we don't know how or when or where the impacts will occur. This fails the test of an EIS and the forest planning regulations. For example, there is no discussion of cumulative impacts to wildlife over the period of exploration and development, or discussion as to how recreation or visuals will be impacted. There are no guidelines to provide direction for when surface disturbance may occur on specific tracts. We ask why and would like an answer. And we would like to know why there is no array within the alternatives.

For oil and gas and other minerals on NFS and other public lands there is no consent only recommendation by the FS.

As you suggested, stipulations will be identified to lands they apply to by management unit. All lands not precluded by law from leasing will be available for leasing. Surface management protection will be provided by No-Surface-Occupancy (NSO) stipulation and other special stipulations. These will be in the prescriptions for each management unit

The impacts of oil and gas activity will occur where the minerals are and, in most cases, we can only note the potential. The available lands will be protected by the NSO and special stipulations in accord with the prescriptions for each management unit. Little variation of mineral activity is expected in the alternatives except more common variety minerals activity could be expected under the market alternative - primarily for road aggregate.

Environmental analysis are conducted in each of the various stages of minerals activity; leasing exploration and development and production. This is done in accord with policy of FS and BLM.

Concerning cumulative impacts; the policy and position statement are: The preparation of an EIS on each leasing proposal speculating about the potential environmental impacts of a possible development proposal would be impractical, costly to the government, and greatly slow down the rate of leasing. We believe that a more practical, reasonable approach is to do staged environmental analysis, starting with the development of stipulations needed to protect environmental values, at the lease issuance stage followed by detailed environmental analysis of site specific exploration or development plans submitted by the lessee."

The inability to understand where the Forest Service will restrict mineral activities is compounded by the lack of a map deliniating where the various restrictions' categories are (Table IV-22 DEIS). What does "High" "Moderate" and "Low" restrictions mean? Where do they apply? Why does the preferred alternative place the fewest number of acres in the High restriction category? We have been told by the Dixie Planner that this is in error. If so, and we certainly hope it is, it should be corrected in the final plan. But an acreage figure is useless without a map showing where the restrictions apply. This is one of the few plans that has not provided such a map.	An error was made in the acreage allocations. This will be corrected. We will modify the proposed plan to identify stipulations to lands they apply to by management units.
The plan assumes mineral development and exploration will increase yet there is no acknowledgement of the obvious down turn in the oil industry. This results in what is very likely an inaccurate assumption that additional areas of the forest will have to be developed to meet this demand (Appendix A-13). Also, the plan assumes additional discoveries will replace dwindling production form the Upper Valley field. We question this and would like to be provided the planning records that justify these assumptions.	The current oil industry down turn is short term and could change at any time. We concur that the Plan should not assume additional discoveries will replace dwindling production from the Upper Valley field, and will delete it from the Plan.
Nowhere are these assumptions more questionable than in the section on coal production. The DEIS (p. II-16) states "Coal production would begin on a modest scale about the second decade and gradually increase until the end of the planning period." What evidence is there to back up this statement? Past development proposals for the Alton and Kaiparowits coal fields have met with substantial opposition which will only intensify if these issues are again raised.	It is fully anticipated and accepted that there will be a shortage of oil by the year 2000 (approximately); and that additional pressures will be put on alternative energy sources, of which coal is the major available alternative. There has been interest in coal of southern Utah of which much of the resource underlies the Dixie NF. We fully expect substantial opposition from special interest groups to coal development in the area.
The DEIS (p. III-40) admits interest in coal development has been restricted by lack of a market and isolation of the resource. What evidence is there that the market for the forest's coal will improve or that the coal fields will become less isolated? To the Forest Service's credit the EIS acknowledges it is highly unlikely the coal can be utilized in the area because of the extremely sensitive scenic and air quality values. This only compounds the economic/isolation constraints to coal development. All but ten acres of the coal fields have been found unsuitable for surface mining (Appendix I). The plan does not consider whether these areas are suitable for underground mining. Clearly it is very unlikely that any substantial coal development on the Dixie will ever occur. The faulty assumption that major coal production will occur on the forest makes this a hypothetical plan and not a realistic attempt at addressing the future condition of the forest.	There is no immediate evidence that it will become less isolated (the coal in southern Utah). When coal becomes valuable enough, someone will access it - this is predicated on the expected and very real oil shortage. The unsuitability criteria only applies to "surface mining operations" according to the Surface Mining and Reclamation Act SMCRA). It was applied to surface operations in connection with underground coal mining. Everybody recognizes that when the shortage of oil comes, the major energy source will be coal. Underground mining of the large commercially developable coal deposits under the Dixie NF is considered a legitimate National Forest use, where the impacts can be mitigated. Again, as with oil and gas, environmental assessments are conducted at each stage, leasing through production.
The plan states "Valid existing claims and leases can still be developed in the three Dixie National Forest Wildernesses" (II-39). Where specifically are these valid claims and leases and what are the stipulations and	There are no mining claims within the three Wildernesses on the Dixie NF. There are existing leases for oil and gas, however, we will delete the part about claims. The specific information about leases is available at the Dixie Supervisor's Office.

restrictions on them? Where specifically would surface disturbing activities be allowed? A map showing leases and claims in wilderness would be helpful. The plan should answer in detail the above questions.

Here again the plan becomes hypothetical by ignoring the extreme legal, resource and political constraints on the likelihood of allowing mineral development within a designated wilderness area. The plan should be corrected by clearly stating that no wilderness impairing activities will be allowed in any of the three wildernesses as that is the clear intent of the Wilderness Act.

The Utah Wilderness Act provides for valid existing rights.

Impacts of mineral development on unroaded lands needs to be planned for and described in the plan. The Forest Service cannot hide behind the idea that the mineral industry determines where development will take place. The Forest Service has the responsibility to the public to determine what areas will be impacted and which, in order to protect other important resources, will be off limits.

It would be appropriate and entirely in keeping with Forest Service directives to place all 555,390 acres of unroaded lands closed or highly restrictive to mineral development. Indeed this has been the case since RARE I (1972) without adversely affecting the mineral industry. It would leave 70% of the forest open to development, more than adequate to meet demand during the next 10-15 years. The plan assumes nearly all unroaded areas will remain unroaded but fails to actually allow a non-development prescription. Furthermore, the plan appears to allow potentially extensive and damaging mineral development in these unroaded areas. If this were to happen the plan would become exceedingly deceptive (one assumption given to the public is protection of the unroaded lands and the other is maximum development). Furthermore, the DEIS environmental impact section far understates the actual environmental impacts to all resources if these undisturbed, unroaded lands were all of a sudden roaded for mineral exploration and development.

The Draft Plan will be revised to reflect the need to protect unroaded areas with no-surface-occupancy designation of some areas. The no-surface-occupancy areas will be mapped and designated accordingly. (See Management Area 2# on Final Plan Map.)

Table IV-42 in the DEIS confuses the issue further. It simply does not seem to correspond with management area direction. According to the Table, 106,511 acres will have total or high restrictions under the preferred alternative. However, reading the management area prescriptions indicates far more acreage will have high restrictions. Big game winter range (5A & 5B) does not allow new roads inside the management areas. Riparian areas (9A,9B & 4A) obviously are highly restricted. MIS areas (4B), RNA's (10A), municipal watersheds (10B), winter sports sites (1B) and semi primitive recreation areas (2A) all indicate strict mineral development restrictions. Wilderness areas (8A) are closed and developed recreation sites (1A) are withdrawn from mineral entry.

In an effort to clarify the information in Table IV-42, we have deleted this table and have included the areas with restrictions on the maps.

In other words, the management area prescriptions imply approximately 725,000 acres are in the total or high restriction categories. This spells out the need for a clear and precise explanation of what the leasing restriction categories mean and a map showing where each will be applied.

In conjunction with the above concerns we recommend the Forest Service develop an alternative that includes stipulations for protecting surface resources including No Surface Occupancy and Limited Surface Occupancy stips in all critical big game winter and summer ranges, riparian areas, RNA's and unroaded areas. This satisfies the long standing public concern for protecting these areas from damaging development and it meets industry's needs. It satisfies regional directives of maintaining an adequate supply of lands open to development. Two-thirds of the forest would be open. Why isn't this enough to meet demand for mineral development on the Dixie? Why doesn't the plan protect unroaded areas from mineral development? Why aren't wildlife resources automatically protected with NSO and LSO stipulations?

This would give the Forest Service and the public some control over the impacts mineral development will have on the forest and the host of resources we are concerned about. The plan would then be in compliance with the public's wishes, as well as Forest Service directives and industry's needs.

No surface occupancy would be the rule within areas delineated by UDWR as critical wildlife habitat. A limited surface occupancy stipulation would be applied as conditions warrant.

Unroaded areas

It was a real disappointment to see the value of unroaded areas on the Dixie totally ignored and no protection afforded these areas in the plan. Why does the preferred alternative not harbor a nondevelopment prescription? Certainly, this was an issue throughout the forest plan and the years of working with the Dixie.

The total lack of protection for unroaded areas is couched in the statement, "enactment of the Utah Wilderness Act of 1984 resolved the roadless area and wilderness issue" (Appendix A-5). The Utah Wilderness Act did not send a signal to ignore unroaded/natural areas on the forest. It does prevent you from making wilderness recommendations during this planning horizon. It does not prevent displaying the social or environmental impacts of not protecting these areas. It does not prevent developing management prescriptions that protect these important backcountry areas from development. It does not absolve the professional/multiple use responsibility to protect the natural values of these areas in order to meet an array of uses. A substantial public concern, both local and regional, exists for backcountry recreation on the Dixie. Thus on this issue we must challenge the issues and concerns raised in the plan.

The plan "estimates" that after the first decade 97 percent of present areas meeting minimum wilderness qualities will still meet those qualities (DEIS IV-14). However the plan does nothing to insure this will be the case. It doesn't describe how these areas will be protected. It doesn't describe which 97 percent will maintain wilderness qualities. Will there be large blocks of unroaded lands or will virtually all the unroaded areas be crisscrossed with roads which "use up" only three percent of the unroaded land base? The plan should provide a map showing the unroaded areas developed..

The plan states, "About 222,300 acres will remain in the semi-primitive non motorised (ROS) class until the year 2030" (IV-19). What areas are these, and where specifically in the plan is there a management prescription, or any effort for that matter, that protects these areas in an unroaded, SPNM condition? How can the Dixie make this claim when they are leaving these areas open to mineral development, timber harvesting and ORV's?

In both instances the plan is hypothetical and deceptive. The fact the plan "estimates" lands will retain their wilderness qualities shows it is not really planning. The purpose of planning is to build a plan to meet demands, not to make guesses. It is deceptive because it tells the public that a major concern--protection of unroaded areas--is being

Semi-primitive recreation area does not totally prohibit the use of motorized vehicles but as is stated in the description of this area. The area will provide an opportunity where the experience is dependent upon a perception of remoteness and closeness to nature.

This statement was put into the plan due to the fact that we know where development is to take place according to timber plans, range, and other resource plans. We can not predict totally where all minerals will be developed, but baring mineral development, the 97 percent is an accurate figure. Again as previously stated, the no-surface-occupancy designation will give additional assurance of semi-primitive experience on designated areas.

These 222,300 acres are those in the semi-primitive recreation category. The desired future condition of these areas is to provide a high probability for isolation from the sights and sounds of humans, provide for an experience that will give an independence and closeness to nature, an opportunity for tranquility, and self reliance. We feel the no-surface-occupancy designation will provide for many of the concerns you expressed.

As suggested, the Forest is providing additional protection with ORV management appendixes and no surface occupancy designations. The no-surface-occupancy will be applied to some of the 2A areas but will also be applied in other areas such as 10A and 10E. These areas will be mapped. The prescription for management area 2A calls for the protection of the natural features of the landscape. It states that the management activities will not be evident and will remain visually subordinate to the natural landscape.

accomplished when in fact no such protection is being afforded. The Dixie needs to do one of two things; either admit unroaded areas are not going to be protected, or change the plan to include management prescriptions that protect them. Obviously we support the second option but either way the plan needs to spell it out.

In assuming the unroaded lands will remain undeveloped, the plan fails to address the impacts to the forest if these areas are developed, which the plan would allow. Clearly the impacts to wildlife, soils, visuals and recreation will be far different than the impacts portrayed in the plan. Again, the Dixie needs to discuss these impacts or else do the right thing by protecting the unroaded areas from development.

The plan fails by not providing a diversity of opportunities on the forest. Aside from the implication 222,300 acres will remain in SPNM, the plan does not identify a single area as such. In fact it only allocates areas to semi-primitive recreation and does not seperate motorized from non-motorized. However, the plan places the exact same number of acres in the SPR class as it claims will be in the SPNM class in the year 2030. Are the 2A Management Areas actually SPNM? They should be and this certainly seems to be the case but the plan needs clarification. In either event, without non development prescriptions the management area and ROS categories are meaningless.

Specifically, we would like to know and see a map in the final plan as to where the unroaded areas will be at the end of this planning cycle and where they will be at the end of the first decade. The question remains will the acreages used (97% or 222,300 acres) represent small chunks of unroaded islands rather than the continuous and contiguous blocks of land?

Why doesn't this plan include a roadless area benchmark? And why is there no alternative which proposes to maintain all unroaded lands as unroaded through strict prescriptions? This can't perceived as counter to the Utah Wilderness Act because these lands do harbor resources needing special attention such as non motorized recreation, wildlife valyes and high visual quality. Since the plan predicts 97 percent of the roadless lands will remain roadless, it is quite obvious these areas are not expected to provide other non compatible resource outputs. A roadless benchmark will not affect the output of other resources. Many other plans, Region VI for example, have included a roadless area benchmark.

We simply cannot support a forest plan that pays absolutely no heed to the protection of undeveloped lands. It is as though years of work with the Forest Service on protection of a number of important areas simply went out the window with the Utah Wilderness Act. It sets in concrete our belief that without congressional wilderness designation, forests like the

There are no projects planned for the 222,300 acres of semi-primative recreation areas. It is most likely that the areas will remain in the sizes they are now.

A roadless area benchmark is not required since Utah has a Wilderness Bill. Roadless areas where studied in developing recommendations for wilderness legislation.

Dixie will never protect undeveloped/natural land types without the public pleading, begging and dragging the Forest Service along.

For at least 10 years and all through this planning process the Dixie has known of areas of particular importance to conservationists and the reasons for protecting those areas. Our concerns have been flat out ignored in this plan.

All unroaded lands in Steep Creek, Casto Bluff, Table Cliff, Deer Creek, the Boulder Top and surrounding the Pine Valley Mountain Wilderness deserve special attention. These areas should be protected with No Surface Occupancy stips for oil and gas leasing and withdrawn from mineral entry. All other unroaded areas should have LSO stips and high restrictions. The travel plan should close all unroaded areas to motorized use including snowmobiles. This would provide an array of ROS classes which is sorely lacking from the current plan. It would leave two-thirds of the forest open to motorized use. It would provide a diversity of recreational opportunities and experiences. It would provide a quality hunting experience and provide escape areas for wildlife, not only from hunters but year around. Explicitly protecting all unroaded areas will not affect the other resource outputs on the forest since the plan indicates only 3% of these areas will be impacted.

Of utmost importance, the identity of the forest is at stake. It is clear wildlife and visuals and soil stability and water quality are dependent upon maintaining these undeveloped lands in their natural state. The plan states and restates this through the non-market alternative.. The uniqueness of the forest--the plateau lake-country of Boulder Top, the old-growth ponderosa pine of Henderson Canyon, the redrock of Steep Creek, the wildlife habitat of Mt. Dutton and the Pine Valley roadless areas adjacent to the Pine Valley Mountain Wilderness express the physical form, size and beauty of this forest. But the forest plan doesn't protect these areas and that represents a flaw of paramount significance.

The plan implies there will be no timber harvesting in the unroaded areas. We applaud this and can only hope our interpretation is correct. Again though, this points out the need to develop guidelines and prescriptions that insure these areas will be protected. (Other forests, like the Wasatch, have done this.) Leaving them open to development will not satisfy the requirements of planning or the concerns of the public.

The conversion factor used to estimate RVD's per acre in the wilderness areas was determined using broad criteria. The Management Plans for the individual wilderness areas will tie the capacity down to match what is on the ground. These plans should be completed by fall of 1987. Based on what the use in the wilderness has been in the past, there should not be any problems from over use before the plans are completed.

The VQO of retention was designated before the wilderness status of the area. Therefore, it was classified as retention rather than preservation, which is given to wilderness areas.

Wilderness

Our concerns primarily revolve around the RVD/Acre Conversion Factor which is used to determine wilderness use capacity and future demand, management as "semi-primitive," VQO allocation as retention, preparation of a wilderness management plan, interim management of the wilderness resource and available potential wilderness at the end of 50 years.

We can find no direction or justification in using the figure, .32, as the RVD/Acre conversion. Why was it used? And what does it mean? What is the existing use right now of each of the wildernesses on the Dixie? It stretches common sense to believe the conversion factor should be the same for each wilderness since the size and terrain are radically different in each wilderness thus defining the capacity differently. Wilderness-type recreation use is one of the fastest growing forms of use on forest lands and the plan simply fails to acknowledge this and, in fact, makes decisions counter to this increased use. We suggest you seriously look at other forest plans and data showing this increased use and restructure your use figures. Clearly, this will show more acreage of wilderness will be needed in the next decade.

The figure of .32 RVD's per acre conversion factor was determined by using the best available information at the time. We used the information that was developed for the Recreation Opportunity Spectrum Handbook, which was developed as a basic frame work for inventorying land according to recreation potential. The inventory was integrated into the Forest Planning Process according to the Forest and Rangeland Renewable Resources Planning Act of 1974 amended by the National Forest Management Act of 1976. No detailed use figures exist for the wilderness areas at this time to determine a more accurate basis for capacity. These use figures will be updated with the plans that are to be completed for each individual wilderness area. We welcome your participation in the development of individual wilderness management plans.

The statement that the wildernesses will be managed in a "semi-primitive setting" or provide "semi-primitive recreation opportunities" is both disturbing and confusing. If this refers to the ROS category it is entirely incorrect and counter to regulations. If it has some other meaning then the plan fails in explaining the category and intent of the direction. It is not listed in any appendix or in the plan or standards or guidelines as to what is intended.

We agree with your point and have changed the standards and guidelines to emphasize wilderness management direction.

The standards and guidelines also erroneously list the VQO as *retention*. This is incorrect as wilderness by regulation and definition in the VQO is defined as preservation. Retention does allow some management activities, though not usually evident, which would be counter to wilderness designation. This allocation must be changed.

Our reference to retention was based on valid existing rights within wilderness areas, which could result in some development activities which would reflect a retention philosophy rather then preservation. However, preservation is the paramount VQO for wilderness.

Not only does the plan and draft EIS fail to define or describe the term "semi-primitive" as it relates to designated wilderness, but it also fails to define or describe the Frissell condition classes. We are very familiar with the usually used Limits of Acceptable Change (LAC) for wilderness management. Included in the document must be a description of the Frissel conditions in order to determine what is meant by phrases such as "...manage sites within Frissel Condition Class 3 except for designated sites which may be Class 4." Why wasn't the LAC used?

We used what we were most familiar with which happened to be Frissel Condition Class. These definitions have been put into the plan.

The standards and guidelines also have a management direction dealing with road access and design. Within Wilderness Mangement Area 8A there can be no road access or road design because there are no roads or there can be no roads constructed. Of course, we assume this is a mistake in the plan and it should be removed.

We would suggest all management prescription and activities pertaining to Wilderness Area Management under the General Direction (p. IV-31 to IV-32) in the forest plan be moved, as well, to the Management Area 8A description. Because wilderness area management is basically prescribed by the actual enactment of wilderness the specific and general direction is no different. The prescription/direction material in the forest plan general direction is actually site specific to the particular wildernesses.

Unfortunately the forest plan is not specific to each wilderness. Already we have noted the demand and capacity levels have been determined much too uniformly for vastly different wildernesses. The same concern holds true for management direction relating to party-size limits, lengths of stays, number of horses, use of open fires and other wilderness management concerns. There is no wilderness manager today who is "limiting" party size to 25. That simply is too many people and/or stock for an area like the Ashdown Gorge Wilderness (7,000 acres). It is an equal problem in the very fragile Box Death Hollow Wilderness. Even in the Pine Valley Mts. Wilderness it is far too many as the plan already notes overuse is a substantial problem. Where did the forest get the figure of 25 as party-size limitations? Furthermore, the standards allow a figure higher than 25 rather casually by simply stating larger parties are okay if they are harmonious and can be screened. Why? It simply destroys the ability to manage the resource and makes a mockery of any attempt, in fact, to determine use capacities and manage people within the wilderness resource.

Of equal importance the plan fails to discuss length of stay limitations. These are likely needed due to the small size, fragile terrain or heavy use and limited camping sites. The plan also talks of prohibiting campfires in subalpine, meadow or riparian areas. How will that be done? A better standard to implement, in particular on the Box Death Hollow Wilderness and the Ashdown Gorge Wilderness, is a no campfire standard. This is widely used in wilderness management today and is quite applicable to these two areas. The standard of limited campfires as provided in the plan should be placed on the Pine Valley Mts. Wilderness and with the clear ability to implement the standard.

How did the forest come up with the trail and camp encounter capacity of 20 parties per day? With that figure, if it is occurring anywhere on any of the three wildernesses on the forest, it is obviously a serious overuse problem exists and action must be taken. Another standard which is regularly not seen on wildernesses is the 20 day maximum stay limitation. Why is the trail

Because of the language in the Utah Wilderness Act which states "subject to valid existing rights," the possibility exists that roads could be developed into a wilderness area if there were an existing lease and the owner has the right for surface occupancy and the right for feasible ingress and egress.

To be consistent the prescription should remain in the General Direction.

Individual management standards will be written for each wilderness. Group size and other specific direction will be provided in the individual plans.

We appreciate your experience and ideas about length of stay, campfires, etc. We plan to finalize these guidelines in the development of individual wilderness plans. We hope to have your help in this important task.

capacity different for open lands than forested lands? Different isn't the word--the plan makes a determination that in forested areas it would be possible and desireable to encounter over 5 times as many people hiking than it would be in open or meadow areas. Why is that? Since a trail weaves around trees and is a single lane of travel people will encounter one another and create the same sense of loss of solitude regardless of the "hiding cover." And what happens when the trail leaves a forested area and moves into an open area and back into a forested area? How do you control the PAOT/Mile of trail? A better standard is to determine the capacity of the trail system in physical terms (damage to the trail), campsite capacity and goals of providing solitude. From there the capacities are further honed with an understanding of the physical limitations of the wilderness and the goals of providing wildlife encounters and the like.

Clearly, the Pine Valley area is already likely bumping up against the capacity limit in some areas and this needs to be addressed.

We certainly support the concern that a natural fire program be initiated. In particular the Pine Valley and Box Death Hollow areas are prime candidates for a fire program due to the kind of terrain, vegetation types and relatively low occurrence of fires in the first place. Ashdown Gorge would likely be too small on its own. The fire program on the wilderness is likely dependent upon the Park Service fire program. At the same time the watershed values for Ashdown Gorge are likely to be an important factor in determining the fire program due to the small size of the wilderness.

One standard prohibits recreational stock from using lake shores, streamsides and springs except for through travel and watering. That's good and we would suggest that standard be applied to domestic non-recreation livestock. If applied to one why not the other. Clearly it must be applied to both and not selectively applied.

Under forest management direction goals and objectives it is noted a wilderness management plan should be prepared by 1990. Why so far into the future? Because of the lack of specificity and understanding of the wilderness resource we would suggest a rapid implementation of the wilderness planning process in order to prevent wilderness resource degradation and radical management procedures.

In summary, our concerns are that wilderness management is so new on the Dixie that all of the research and mangement studies have not been consulted. A tremendous resource exists which doesn't appear to have been utilized to determine how to manage these three wildernesses. Major management issues have not been confronted such as length of stay, horse, use, size of parties, goals of providing solitude, trail management, campsite

Some areas within the wilderness area are no doubt, presently at their capacity. We will address these problems in the individual wilderness plans.

Fire objectives will be an integral part of each individual wilderness plan.

The Forest plans to complete the individual interim wilderness plans this year. We plan to complete the final plans by 1987.

and campfire management. Though they have been mentioned they have been mentioned far too broadly or in an unrealistic manner (trail encounters, for example). Furthermore, the direction fails to look at the three areas as being separate and very different areas. You just can't generalize on areas ranging in size from 7,000 acres to 50,000 acres and including heavily forested slopes, important stream drainages and exposed sandstone canyons. Adequate demand projections have not been made and are compounded by an apparent lack of knowledge of existing use and a RVD conversion factor which seems very unrealistic and is quite different from most other forest plans. An inconsistency exists as well as the plan repeatedly states there is already an over capacity on much of the Pine Vallley Mts. Wilderness. Finally, wilderness management is viewed entirely from a recreational perspective.

The plan and d. EIS do exhibit how much unroaded acreage would likely be unroaded and still qualify for wilderness at the end of the 50 year planning cycle. However, the plan then places that estimate into the meaningless category by stating none of it may exist due to the inability of the Dixie to control mineral development and location. Of course, this represents a serious planning fallacy and borders on deception as it attempts to meet a major public issue by noting roadless lands will be preserved...maybe. What 3% of the unroaded lands will be developed after 50 years? At the same time we want to compliment the forest for, in fact, recognizing the importance of roadless lands in terms of resource utilization and maintenance of forest values. Our section on unroaded lands will go into this issue in more detail and suggest a solution to the *perceived* mineral management dilemma the plan insists on using to potentially eliminate some unroaded lands from the "inventory."

True we don't have a handle on wilderness management for the individual areas. However, more accurate information should be in the individual wilderness plans, and we welcome your help and ideas in providing information on carry capacity experience levels etc.

A change was made in the final Plan to more clearly recognize the sensitivity of some of these areas through the establishment of no-surface occupancy stipulations for mineral activities.

E & I SOIL CONSERVATION DISTRICT
P.O. BOX 645
CEDAR CITY, UTAH 84720

January 14, 1986

CALVIN BIRD
DIXIE FOREST SERVICE
CEDAR CITY, UTAH 84720

SUBJECT: Dixie Forest Proposed Land and Resource Management Plan

Dear Mr. Bird:

The E & I Soil Conservation District appreciated having you and Rollo Brunson attend our last meeting to review the Forest Service plan on the Dixie National Forest. We have the following comments:

1. We can tell from the plan that much time and money went into its preparation. The District strongly questions the need to invest this much time and money in preparing a plan. Had this time and money been spent in the field, actually doing the work that all who work with the Forest Resources know needs to be done, then many of the items in this plan would already have been implemented.

2. We felt the plan to construct and reconstruct trails is a very good and overdue idea. In fact, maybe more of this type of work should be planned.

3. In your discussion, you mentioned the increased emphasis on managing the scenery along roads to hide from view any evidence of man's activity. In regards to the livestock industry, the District feels that this is the wrong way to go. The livstock industry in the National Forest is part of the western culture. This is what many people visit the western forest to see and it should not be pushed back out of sight.

4. We feel that much more importance should be placed in predator control in the National Forest, possibly looking at some less expensive methods of control.

These were the major items of concern discussed at our meeting. We hope that you will address them in your plan. If you hve any questions, please call me at 978-2336.

Craig Jones for Jay Hunt
JAY HUNT
Chairman, E & I SCD

RESPONSE TO LETTER 026

Visual quality objectives along transportation corridors will vary, depending on the classification of the specific area in question, and in many cases no attempt is made to hide evidence of man's activity.

Other than approval of predator control plans, the Forest only acts as a liasc between the livestock permittee requesting predator control assistance and the Animal Damage Control (ADC) Division Animal and Plant Health Inspection Service, USDA who accepts those requests and acts on them. We approve or disapprove use of control methods, but ADC designs and carries them out.

ESCALANTE SAWMILLS, INC.
Escalante, Utah 84726 — Telephone 826-4715
— Quality Building Products —

Mr. John Lupis
Forest Supervisor
Dixie National Forest
P. O. Box 580
Cedar City, Utah 84720

Dear John,

After reviewing the proposed Dixie National Forest Plan and the accompanying Draft Environmental Impact Statement, I would like to take this time to submit our comments. But first, let me commend you and your staff for the hours, commitments, efforts and results attained in achieving a balanced plan to address interests in resource outputs and long-term management of the National Forests.

1. Timber outputs. In addressing resource outputs the system has created some bias's which do not fairly reflect benefits and outputs. Our concern is relative to timber and the outputs affected by timber management. To begin with, we would like to see an equal treatment fo all resources in the benchmark analysis runs and in the alternative's runs. The benefits attributed to timber are not true reflections of the actual Public Net Benefits derived from timber management.

Another area of concern relative to benefits is the placement of the values and benefits of resource outputs created by timber completely to these other outputs, such as wildlife, dispersed recreation and grazing, explicitly and implicitly valued resources. These resources are attributted most of the non-cash benefits accrued in the alternatives Average Annual Cash Flows and Non-Cash Benefits charts in the Alternatives chapter of the DEIS. We would like to see some of these non-cash benefits distributed more evenly to timber. This could help to defend the Preferred Alternative and the Forest Plan if there were more of a balance in the benefit column, at least from a timber standpoint. With the same train of thought, perhaps some of the costs that are solely charged to timber should be spread to other tesource outputs such as road construction and maintenance. Also, costs caused by other resource needs which inflate timber sale packages for mitigating resource conflicts. (e-5DEIS)

The use of finished product values would also help to offset some of the systematic bias's used in trying to compare timber values throughout the region. The finished product values, the wholesale value which we market our product has been in the last 2 years about $230.00 per thousand board feet lumber tally, (this does not include the value of chips and by-products). With the overrun applied $300.00/M log scale.

In comparing the alternatives, a question is directed to the difference in acres available for timber management between Alternative B, the composite and Alternative F, the market emphasis alternatives of 103,300. In discussing this, it appears that this difference is due to economics,marginal and aspen. In the composite alternative we would like to maintain the flexability to manage some of these areas if economics and markets allow and not designate them as something else, thus locking out timber management opportunities.

Using the standards for Land Suitability in the DEIS, 335,800 acres available for timber management, at 20 cubic feet per acre per year and a conversion factor of 5=33,580,000 BF per year of growth. It must be assumed also that the 20 cubic feet per acre per year is extremely conservative, because 20 is the lowest classification for Commercial Forest suitability. About 98% of the classified suitable forest land has a growth potential of 50 cubic feet per acre and more. Only two alternatives, RPA and High Productivity approach this level. (11-25LRMP)

At the present time, we see no problems with the timber values used. In the FORPLAN model, most all alternatives were forced to cut at least a minimum volume. This was the case with Alternative B. Other resources were not valued in the FORPLAN model and did not compete with timber. Benefit values for timber were an average of data over the period of 1974 to 1984 from Dixie timber sales, adjusted by species and diameter. Road costs were entered separately as dictated by roads needed for entry into the stand and analysis area. Stumpage values used were certainly higher than those that the Forest is now receiving. We feel, however, that they are reasonable estimates over the long run.

Benefits that are jointly produced with timber harvest certainly do occur. Higher mitigation cost to obtain these additional benefits (such as road closure for wildlife) somewhat offset these added benefits. At present, we have no good method of getting a handle on the accounting of added costs and benefits. It is our feeling that bottom line would produce some differences. Roading benefits to recreation is another example. We do not feel that creating additional miles of road adds to the value of recreation since we already have surplus capacity. More than likely people would shift their activities from one area to another. Improved access (a qualitative measure) would be provided to the recreating public, however. Activity created fuelwood is counted by the Forest as a benefit. Healthy timber stands (reduced mortality) for visuals, recreation, and wildlife requiring seral stages are also subjectively weighed in a decision.

Benefits to other resources created by timber are not displayed. As mentioned previously, sawtimber values, fuelwood values, and some subjective benefits of timber management including community stability are the only benefits attributed to timber.

You raise a valid point regarding cost accounting between resources. Certain overhead charges and other timber management expenses do not always apply to the timber program. Given the complexity of the problem and the inability of the accounting system to accurately distribute all costs, we feel we have done the best we can in dealing with timber fairly. We have explained the problems in narratives which must be dealt with subjectively in the decision.

Finished product values with the adjustments for chips and overrun were used to arrive at bid values representing the value of wood at the point it leaves the Forest. You were correct in pointing out that we use predicted high bid values rather than product values. This puts all resources on a supposedly equal basis. For example, the three dollar value for recreation RVD's was an estimate of what a user would pay if a gate were put up at the Forest entrance. Like selling value log scale for timber, travel cost to the recreationist (and product values) were used in the analysis to arrive at the benefit figure for recreation. Three dollars per RVD is net of travel costs, however, and represents a benefit value at the same point as timber. In theory this is the value of the product consumed on the Forest. If the Forest Service were to do as you suggest and value timber as an end product, it would be necessary to do the same for other resources, increasing their values as well.

The difference between the tentatively suitable acres available to FORPLAN between Alternative B and F is around two thousand acres (DEIS Table IV-10). In addition, some constraints on type of final harvest (delayed shelterwood) were used on Alternative B. Without these differences, there would no longer be two alternatives.

2. Other Resource Outputs. We would like displayed the reciepts from Wildlife, Dispersed Recreation and Water Yield in the tables Resource Outputs, Activities, Costs and Benefits in Chapter two of the DEIS. Realizing that these are "Zero's" they should be listed for comparisons with other outputs.

Current capacity for dispersed recreation is directly related to accessability. Since this is an obvious statement of fact, we can somewhat project some Non-Cash Benefits and attribute to timber: for example; if semi-primitive Non-Motorized Recreation were the only available output and no accessability due to timber harvest had occurred, the absolute maximum capacity would be 1630.5 MRVD's, 4037.8 MRVD's less than the current capacity table 11-8 shows. To take this one step further, apply this theory to the projected use. Only about 28% of the estimated MRVD's would be used or only 236,000 in 1990 and 1,347,000 by the end of the planning period. These are only rough estimates based on "what if?" (11-8LRMP)

3. Management Indicator Species. We don't feel that MIS are necessary for observing effects on management practices. These species fluctuate due to natural causes and for some of the species chosen no firm data of population exists. If MIS's are necessary Deer and Elk are probably the only influenced species and then only mildly when compared to natural influences that occur. The use of Wild Turkeys as an MIS for Ponderosa Pine is ridiculous. It is a transplant species of which must be restocked in periodic transplants. (11-14,16LRMP)

4. Insect and Disease, Dwarf Mistletoe and Limb Rust problem situations are not just scattered throughout the forest in small pockets, but rather their occurrance is widespread and a major cause of mortality. For the forest 19.4 MMBF of timber is lost annually to insects and disease. (this is an estimate made using the existing inventory data which has some questions in regards to it's soundness) It has been stated in the DEIS Chapter 3, page 53, that nearly all Douglas Fir is infected with mistletoe, and 40% of the Ponderosa Pine. (11030LRMP)

5. Regional Market Area. A statement made here is somewhat misleading. The plan assumes that forest products harvested here on the Dixie are used locally or regionally, which is not entirely true. The products produced by Escalante Sawmills, Inc. are marketed West to California, South to Arizona, New Mexico and Texas, and as far East as Pennsylvania. (11-35LRMP)

6. Research Natural Areas. We do not have any problems with the RNA's themselves, but would like to be assured that they would not blossom into something needing larger and/or buffer areas. We would not like to see potential timber acres included in the fringes so as to say "maintain a control." (4-15LRMP)

7. In the Implementation Chapter, monitoring and evaluation, under the activities column, the timber costs projections segment should be removed to avoid having to make changes when not necessary. The current understanding of this section could penalize for effeciency.

Under the timber section some wording needs to be clarified or inserted to state acres and volume instead of just volume. This would allow land managers the flexability to manage stands (acres) and not be limited to volumes.

We support the Proposed Action with changes made in the assignment of costs and benefits to more fairly reflect the positive outputs of timber, and the method of determining values of timber as an output. Also, the use of harvest levels from alternative G to meet the timber management objectives set forth by the Resource Planning Act of 1985

The 335,000 acres figure (should have been 331,000) does not include a 8,600 acre reduction in the land base representing a harvest reduction needed to meet minimum management requirements of the Forest Service Regulations. This figure also does not include acres that are needed to meet other resources objectives under each alternative (3,300 acres for the Composite Alternative).

Around 73 percent is classed as producing above 50 cubic feet per acre per year on tentatively suited lands; 98 percent of forest lands producing greater than 50 cubic feet per acre per year is from the 1978 Timber Management Plan. This is a gross figure. It does not include scaling or woods defect. The figure is also a potential figure assuming that investment are in place to ensure proper stocking levels. There are many nonstocked, understocked, and overstocked areas on the Forest. Timber stands will realistically take a fairly long period of time to reach desired conditions and growth rates. High stocking levels to maximize cubic feet volumes may not be appropriate for desired sawtimber products in many areas.

In the Composite Alternative, only 19,200 acres were not assigned by FORPLAN as suited because of economics. The Forest feels the suited land base of Alternative B contains enough marginal land to ensure flexibility of management opportunities in the future. This includes slopes over 40 percent, and aspen for which there presently is little demand. FORPLAN was forced to harvest these areas for the very reason of keeping management options opened on those areas. If markets do not develop for aspen and market prices stay too low to justify harvest of more costly areas, the Forest will not be able to maintain non-declining yield.

Receipts for recreation, timber and range are displayed in Chapter II of the DEIS. Wildlife receipts are clearly displayed as "0". These may be found for all alternatives and benchmarks on pages II-7A through II-38C.

Roading an area will increase the capacity of that area but it also changes the type of recreation that occurs on the land. Therefore, if one type of recreation opportunity increases, another type will decrease because of the limited land base that is available.

As a Federally classified species, the Utah Prairie Dog is managed according to a Recovery Plan which specifies, among other things, population goals for the Dixie, this amounts to 100 days at each of 11 approved transplant sites. A Utah Prairie Dog population of this size, or even double this size will have little or no effect on other resources of the Forest, considering the dispersion of the transplant sites.

References to dwarf mistletoe and limb rust will be reworded to indicate more serious or widespread conditions on page III-28.

This comment about market area for timber products is well taken and will be written to reflect Southwest markets and areas as far east as Pennsylvania. Reference on II-35 indicates local manufacture.

The RNA's proposals are pretty firm and buffer areas are not needed.

We are not advocating a timber bias in the DEIS, only a fair treatment of relative costs and benefits of the various outputs.

Thank you for the opportunity to address this important resource management plan. Again, we would like to offer appreciation to the efforts made on the cultivation of the Dixie National Forest Plan.

Sincerely,

Sheldon Steed

Sheldon Steed
Forester

cc Allied Forest Products
Intermountain Forestry Services
George Fry

SS/as

The whole "timber cost projection" monitoring section on page V-8 has been deleted

The section of the monitoring plan dealing with the acres and volume harvested will be reworked to recognize the fact that volume estimates are preliminary. There should be no penalty for removing more volume due to minor adjustment in sale boundaries or larger volume per acre estimates so long as Forest standards, guidelines, and objectives for other resources are met.

January 17, 1986

Mr. John Lupis
Forest Supervisor
Dixie National Forest
82 North 100 East Street
Cedar City, Utah 84720

Dear John:

Reference is made to your request for comments on the DEIS for the Dixie National Forest Land Management Plan.

I have been acquainted with the Dixie National Forest resource programs for over twenty years, particularly the timber outputs, with their associated costs, and benefits. These benefits - social, economic, aesthetic and ecological - need to be nurtured, enhanced and continally replaced. It is for these reasons that I have the following recommendations, for incorporation in the Land Management Plan and the Preferred Alternative:

1. Adjust the incremental outputs (Ten year periods) to remove the mature and overmature timber within the first thirty years. Such a change would be a more intensive departure analysis and would get the forest into a vigorous growing condition much more rapidly, materially reducing mortality from insects and disease. It would also reduce the risk from fire and other natural catastrophies, which of course are natures way of regenerating a forest, but which leave the forest denuded and virtually unusable for recreation, wildlife and the community stability realized from timber harvest. The parameters of this increased harvest would need to be modeled but it seems that annual harvests of softwood around 28.0 to 30.0 MMBF for the first three decades might be close. The Preferred Alternative shows little or no management improvement over the next fifty years.

Please note the attached Dixie "Simulation Summarie" of ponderosa pine with a site index of 72. (Dixie site indices range from 50 to over 90) There were four commercial thinnings and a seed cut to 20 basal area at 140 years. The yield on this site is an example of what may be expected from more intensive management of Dixie forest lands. The Forplan runs averaged the yields from all species and the inventory data is not site specific. This has created an output matrix that appears to have suppressed the forest potential

Dave Fordyce
Consultant in Forestry
1740 Lake Street
Ogden, Utah 84401
Phone 801-621-1194

RESPONSE TO LETTER 028

On pages BV-1 through BV-3 of the DEIS a departure analysis is considered. It is clear that larger amounts of softwood sawtimber could be harvested during the first and possibly part of the second decade (depending on how the harvest was metered out) than was reflected in the Composite Alternative B. The ability to manage mature and overmature sawtimber remaining on the Dixie is complicated by the fact that: (1) many of the relatively economical sites have already been harvested or will be toward the end of the first decade, (2) larger amounts of aspen than projected under Alternative B would have to be harvested to maintain output levels, indicating a departure in terms of softwood harvest is already being encountered, (3) growth potential indicated by long term sustained yield capacity would actually be lowered over the next rotation by the liquidation of growing stock and (4) softwood supplies in the fourth and fifth decades would be less than those of Alternative B.

The "Dixie ponderosa pine" simulation that you present is probably realistic for an existing overmature stand on the Forest's best sites. The problem, for the most part is not the volumes you project, but the point in time we are at in terms of the simulation. The large overwood removal in your simulation occurring at year 0 has already occurred in most of the pine type by accelerated harvest in the recent past. We are in complete agreement that intensive management is desirable in terms of stand health and vigor and increased productivity. As always industry is invited to review our ten year sales program and to point out opportunities for prudent timber management that we have missed.

and given a picture of ecological inactivity.

2. It seems resource comparisons should be made with like benefits. I realize this is difficult when there is no monetary return on some of the resources, but it tends to invalidate the comparisons when non-commodity benefits are compared to commodity benefits shown in Tables II - 7a to 38a.

3. Change the parameters of the timber monitoring, page V-6 in the Land Management Plan, to allow increased harvest of the overmature and mature timber.

4. I suggest the forest proceed with great caution on any management changes reducing timber outputs that may be generated by a "below cost" sale analysis. The increased cost of preparing timber sales ($4.50 per thousand board feet for preparation and administration in 1966 to $30.76 per thousand in FY 1986) has been perpetuated by many factors which do not relate to economic sale preparation and administration costs. There needs to be a comparable balance between costs, benefits and returns even going so far as determining tax returns to all levels of government from employees and companies which timber conversion generates, along with silvicultural benefits to the forest. Without the tool of timber harvest, tax dollars would ultimately have to be used to perpetuate the forest at a much higher cost. I realize the Forest Service has been reviewing this problem, but it's inclusion, without adequate analysis, in the planning process could have some very deleterious effects on our National Forests, particularly with the advent of the balanced budget ammendment.

I wish to thank you and your staff for the great amount of help provided in this long planning process.

Sincerely,

David H. Fordyce

David H. Fordyce

Enclosure:

Comparison can be made by both the reviewer and the decision maker on the basis of either benefits (including values assigned to non market commodities) or receipts (cash flow). Non cash benefits are relevant and should be weighed.

A change in monitoring probably will not increase harvest volumes but the monitoring section will be reworded so that a plan revision will not be triggered by volume/acre increases over those estimated. Environmental effects and acres treated will be the focus of monitoring efforts.

All resource economic comparisons are made in Forest Planning analysis at the same point; where they are consumed on the Forest. Differences in employment, income, environmental effects, and returns to the treasury are available for the reviewer and decision maker to compare alternatives. Changing the point where benefits are compared would have to be done for all resources, not just timber. It is agreed that better accounting and valuation systems should be sought and inequities corrected when they can be defined.

The Forest Service is concerned with higher than necessary costs in many resource areas. Balanced budget legislation and the below cost sales controversy heighten the need to find timely solutions for reducing costs. The following quotation may be found in Chapter II of the DEIS cautioning the reviewer to inadequacies which do not allow direct comparisons solely on the basis of economics. "Direct comparisons of benefits and costs displayed for individual resource outputs provide general indications of relationships but may be misleading because some outputs in multiple use forestry have common costs of production that cannot be easily separated and attributed to individual resources." This problem is very real when addressing below cost timber sales.

```
                                         SIMULATION SUMMARY of Year 140
YEAR - - - - -START/GROWTH/END- - - -             - - -MORTALITY/HARVEST- - - -
      TPA     BA     CFV      BFV   CORD    TPA     BA      CFV      BFV   CORD

  0   400.   138.   2780.   14169.   1.5
      400.     2.     31.     110.    .0     0.     0.      0.       1.    .0
      737.    47.    323.    2513.   1.5    62.    83.   2158.   11833.    .0
 
 20   680.    88.   1241.    5070.   1.5
        0.     3.     42.     135.    .0     0.     0.      0.       0.    .0
      427.    58.    544.    1405.   1.5   253.    33.    738.    3530.    .0

 40   382.   111.   1205.    4339.   1.2
       -0.     3.     33.     155.   -.0     0.     0.      0.       1.    .0
      353.    57.    555.    3024.   1.1    34.    27.    382.    1500.    .0

 60   334.   132.   1432.    5537.   1.5
        0.     3.     49.     128.    .3     0.     0.      0.       1.    .0
      310.   112.   1130.    4225.   1.8    24.    23.    351.    1500.    .0

 80   281.   147.   1833.    6237.   5.5
        0.     2.     33.     114.    .1     0.     0.      0.       1.    .0
      272.   130.   1533.    4850.   3.0    15.    20.    231.    1500.    .0

100   253.   158.   2135.    7328.   5.8
        0.     2.     40.     234.   -.5     0.     0.      0.       1.    .0
      232.   138.   1833.    6132.   5.1    25.    22.    346.    1500.    .0

120   220.   182.   2383.    5758.    .1
      225.     1.     27.     148.   -.1     0.     0.      0.       0.    .0
      255.    22.    331.    1380.    .0   181.   141.   2080.    5548.    .0

140  1748.    45.    575.    4385.    .0
        0.     1.      0.       0.   -.0     0.     0.      0.       0.    .0
     1719.     3.      0.       0.    .0    28.    42.    573.    4388.    .0

                              TOTAL BOARD FEET CUT    34441.4
                              TOTAL PULP CORDS CUT         .0

       - - - - - - - - ESTIMATED POUNDS OF FUEL - - -
QUIT
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Western Wood Products Association

1500 Yeon Building · Portland, Oregon 97204 · Area Code 503/224-3930 · Telex: WWPA PTL 910 464 5195

January 17, 1986

Mr. John V. Lupis, Supervisor
Dixie National Forest
Forest Service, U.S.D.A.
P. O. Box 580
Cedar City, Utah 84720

Subject: Comment on Dixie Forest Plan and DES 10/4/84, 1920

Dear Mr. Lupis:

We wish to express our appreciation for this opportunity to review your draft Forest Plan and Environmental Statement. Among the numerous plans that we have examined and are presently reviewing, the subject Plan is outstanding in some important aspects. Particularly worthy of note is the management direction for the recreation resource which is appropriately people-oriented as the situation dictates. The Regional planning target for developed recreation use is unreasonably low for the Forest and your current and planned use levels as proposed are responsive to the management situation in exceeding those objectives. The Plan recreation analysis is a very professional work.

Regarding the softwood forest resource, we are encouraged by your plans to conduct a physical inventory of lands suitable for timber production. Based upon the information provided, there is a high probability that you can sustain and increase the harvest as demand will dictate without adverse impacts upon your inventory of growing stock or diminishing productivity. It is evident that opportunities exist to increse softwood productivity gradually so that there need not be a decreasing future supply as the draft Plan suggests. It would be very helpful to include a description of the program necessary to suppress the western Spruce budworm epidemic and how such action can minimize the growth loss and mortality from this insect.

There is need for a clarifying discussion to conclude your timber sale program cash flow analysis as presented on Page III - 33 of the DES. It should be emphasized that this cash flow analysis is not an economic analysis since total market and nonmarket benefits and costs are not compared. The nonmarket factors need to be clearly indicated and accompanied by a discussion of costs allocated against timber revenue accounts that result in nonmarket benefits.

AN ORGANIZATION OF PRODUCERS
MANUFACTURING QUALITY WOOD PRODUCTS TODAY
GROWING TREES FOR TOMORROW

RESPONSE TO LETTER 029

It is agreed that more information is needed to evaluate timber management opportunities on the Dixie National Forest. We are presently in the middle of an accelerated stand examination program involving approximately 260,000 acres of Forest land. Information reflecting site specific growth, yield, and treatment needs will allow the Forest to develop silvicultural prescriptions and establish thinning and reforestation needs and priorities. At the earliest available opportunity this information will be used to evaluate our present timber planning and harvest scheduling activities and to make corrections or revisions where necessary.

The epidemic of western spruce budworm on the Forest has begun to subside over the past two years. Problems are generally limited to the Cedar City Ranger District where in 1985, 4,277 acres of light defoliation, 9,077 acres of moderate defoliation, and 7,750 acres of heavy defoliation have occurred. Generally, product values in our Douglas-fir and mixed conifer types are low because of past logging and the presence of more severe disease agents such as dwarf mistletoe and rusts. Spraying to control budworm does not appear to be cost effective at this time nor does the presence of the budworm appear to be the major cause of growth losses and mortality in Douglas-fir. Present silvicultural treatments to control other disease factors are compatible with the reduction of the presence of spruce budworm, however, and are presently being conducted to the extent practicable.

The introduction to the DEIS states that the "goal of the proposed plan is to provide for multiple use and sustained yield of goods and services from the Dixie National Forest in a way that maximizes net public benefits in an environmentally sound manner". It will be added that this is not necessarily the greatest dollar return above costs but includes benefits which cannot be assigned a dollar value.

The lead in discussion to the table on III-33 seems to address some of your concerns. The phrase that such an analysis will be added. The reader will be referred to another section addressing the role of economics in Forest Plan decisions.

The footnote on page II-53e of the DEIS "also draws attention to problems with the economic analysis... "Direct benefits and costs displayed for individual resource outputs provide general indications of relationships but may be misleading because some outputs in multiple use forestry have common costs of production that cannot be easily separated and attributed to individual resources".

Mr. John V. Lupis
January 17, 1986
Page 2

It would also be appropriate to state the fact that the Forest Service mandate is to manage the multiple uses in harmony and not necessarily the combination of uses that will give the greatest dollar return. We are confident that you are cognizant of this factual situation but it is well to set forth these considerations for the more complete understanding of your reviewing publics.

Regarding the wildlife resource of big game, it was most helpful to mention the use of road access management but we would appreciate some elaboration on this program. Also discussions of the inter-specific relationships where there is competion between mule deer and elk for habitat and damage to property and soil from various population levels of these animals would be informative.

We recommend that you write a final Plan within the context of a modified composite B alternative that will provide for additional softwood timber as needed in subsequent decades. We believe that the data presented can accommodate such a final Plan without the diminishment of the other important resources by enhancing the productivity and extent of the Forest base.

We wish to compliment the writers of this Plan for presenting documents that are relatively jargon-free, well organized and intelligible to the various concerned publics.

Thank you for the opportunity to present our comments.

Sincerely,

R. M. Fredsall

R. M. Fredsall
Director
Resources and Environment

mab

Western Wood Products Association

Additional discussion of the Forest's road access management program will be included in the final documents. Regarding interspecific competition between mule deer and elk, there are undoubtedly some antagonistic behavioral interactions between individuals of the two species occasionally, but this has never been identified as a significant problem. The species are often observed feeding in relatively close proximity to one another. Property damage by these species is mostly damage to hayfields or haystacks on private lands. Elk occasionally tear up a fence on the Forest, but this is not a major problem. We are not aware of any instances of deer or elk concentrations on the Forest large enough to have caused soil compaction or erosion.

The analysis provides a strong indication that an increase in softwood sawtimber outputs in the first decade would only increase dependancy on aspen in the near future to maintain a timber program and result in very poor economics. The analysis is supported by "on-the-ground" foresters and industry representatives familiar with the Forest's sale program over the next ten years. Should the situation change, as a result of new information or a change in markets or technology, the Forest will re-evaluate the situation.

UTAH WILDLIFE FEDERATION
POST OFFICE BOX 15636
SALT LAKE CITY, UTAH 84115

January 16, 1986

John V. Lupis
Forest Supervisor
Dixie National Forest
82 North 100 East
P.O. Box 580
Cedar City, Utah 84720

Dear Mr. Lupis:

Subject: Response to Draft Environmental
Impact Statement (EIS) and Proposed
Land and Resource Management Plan
(LRMP) National Forest

Attached are our comments relating to the subject draft EIS and proposed LRMP,

In addition to those specific comments we consider your draft EIS and proposed LRMP the best developed and easiest to read and use of all Forest plans we have reviewed. We commend your staff for a job well done.

On behalf of the officers and members of this Federation, which is Utah's largest group of organized sportsmen and conservationists, I thank you for the opportunity to comment on the draft EIS and proposed LRMP.

Sincerely,

Your Friend in Conservation

GERALD E. GORDON
President

enc.

DEDICATED TO THE CONSERVATION OF OUR NATURAL RESOURCES.

UTAH
WILDLIFE
FEDERATION

POST
OFFICE
BOX 15636

SALT LAKE
CITY, UTAH
84115

SUBJECT: Response to Draft Environmental Impact Statement (EIS) and Proposed Land Resource Management Plan (LRMP) for the Dixie National Forest.

1. FISH AND WILDLIFE

a. Rocky Mountain Elk

(1) The LRMP states there are approximately 1400 elk using the Forests at the present time. The Utah Division of Wildlife Resources (UDWR) objective is 2,990 elk by 1990, but is estimated that the Forest can support only 2,000 elk during the planning period.

(2) It is our understanding that it is the responsibility of the Forest Service to provide the big game habitat. Accordingly, we expect the Forest Service to plan habitat development, restoration to support the elk herds recommended by the UDWR.

b. Upland Game

(1) The LRMP states that the current turkey population is 230 birds and the UDWR planned objective is 500 birds. We believe that the objective (500 turkeys) is too low to satisfy public interest. We recommend that the UDWR objective be reevaluated and the actual forest capacity for wild turkeys be established and an objective be established in relationship to the carrying capacity.

(2) We saw no evidence of consideration for other upland game species such as sage grouse, blue grouse, rabbit, hare, etc. during the planning process. Were these game species over looked? We consider them to be valuable wildlife species and we believe they should be considered during the planning process.

2. RIPARIAN AREAS

The documents reflect moderate emphasis for riparian improvements except for the Teasdale area and commend the Forest Service for their efforts. We have concern about pressures from livestock use which will tend to further deteriorate riparian zones.

We strongly recommend an accelerated program to protect the riparian zones from over-use by wildlife and to rectify the damages as quickly as possible.

3. ROAD MANAGEMENT PLANS

We support the road management plans in those areas which will protect the fragile resource from further damage and which will protect big game herds from harrassment.

End of Report.

DEDICATED TO THE CONSERVATION OF OUR NATURAL RESOURCES.

When elk herd plans are completed and population goals have been firmed up, the Forest will support them and cooperate with Utah Department of Wildlife Resources in meeting the goals. The 2900 figure was an early estimate, now being seriously questioned by both DWR and Forest personnel.

We have no problem with increased wild turkey populations, and have been supportive of all UDWR transplant efforts. Wild turkey is a high priority wildlife species on the Dixie and we are planning and accomplishing wild turkey habitat improvement.

Discussion of every wildlife species on the Forest would make the planning documents far too voluminous. The Management Indicator Species concept allows us to select species that will indicate the effects of our management in the various habitats. These species will be representative of the other wildlife species on the Forest,

Serious errors were detected in the mapping of riparian management areas (Prescriptions 9A and 9B) in the draft Land and Resource Management Plan. These errors have been corrected in the final LRMP.

Based upon the comments received on the draft LRMP, Forest Management has re-evaluated the riparian area management prescriptions, particularly as they regard riparian area condition and grazing management. The lack of information currently available on the condition of riparian areas across the Forest is an impediment to the effective management of these important resources. To rectify this situation, an accelerated multi-disciplinary riparian area condition inventory is proposed for implementation within the first 5 years of the planning period. Information on impacted riparian areas acquired in this effort will be used to develop riparian area management plans addressing specific measures needed to improve a degraded area. This approach recognizes that there are different factors contributing to the condition of any particular degraded area. These problems require careful site specific evaluation to develop effective measures to induce recovery.

Grazing management policies in riparian areas geared primarily to Forest-wide forage utilization levels restrict the land manager in implementing innovative livestock management techniques which may provide more effective means to maintain streambank stability, riparian vegetation and other factors commonly impacted by livestock, Nor do they recognize the differences in productivity, stability, vegetative structure and response to grazing that occur among the riparian ecosystems found on the Forest. A more site specific management policy is proposed for livestock grazing in riparian areas.

Forest Service policy recognizes that riparian areas are "among the most productive, sensitive, diverse and often most geographically limited ecosystems within National Forest lands". These areas are capable of supplying a wide range of high quality resources if properly managed. Where resource management activities result in tradeoffs, a careful evaluation is required to produce a proper mix of resource outputs. We recognize that because of the tradeoffs necessary in multiple use management of riparian areas, some resources will not be produced at their maximum potential. However, we do believe that the resource output goals of this plan maximize the net public benefit derived from riparian areas. At the same time, it provides for the maintenance of healthy riparian ecosystems, protects water quality and water delivery related values, and allows for the recovery of currently degraded areas.

We agree with your comment. Protection and rehabilitation of riparian zones is of utmost importance on the Dixie. As budgets allow, riparian area improvement projects will be accomplished. Volunteer help from your organization would be helpful and welcome.

USSC
UTAH SHOOTING SPORTS COUNCIL

January 16, 1986

Mr. John V. Lupis, Forest Supervisor
Mr. Al Schuldt, Forest Planner
Dixie National Forest
P.O. Box 580
Cedar City, Utah 84720

Gentlemen;

The Utah Shooting Sports Council believes that in order to preserve the Right to Bear Arms it is necessary to preserve the lawful use of firearms. We have found that the vast majority of gun owners own their guns as a direct result of recreational activities such as hunting and target shooting. In order to perpetuate this kind of activity we must provide as many opportunities as possible for people to participate in the shooting sports.

We therefore feel that the Dixie National Forest and Resource Management Plan places too much emphasis on activities that will be detrimental to wildlife and subsequently detrimental to sport hunting. We feel the plan should reflect a balanced land management program that allows for sustained wildlife yields in concert with the concept of "multiple use." As such, we would like to see a broader definition of "multiple use" specifically encompassing the legal harvesting of wildlife and other recreational persuits by the public.

It is also our contention that the Utah Division of Wildlife Resources should be able to implement wildlife management objectives they feel necessary in order to keep pace with the growing recreational demands on wildlife.

These objectives will not occur with the habitats impacted as outlined in the plan. Rather, these habitats need to be maintained in the optimum condition with as little negative impact as possible.

Thank you for your consideration of our views.

Best regards,

Alan Carver

Alan Carver
Chairman

Game populations (deer, elk, wild turkey) are increasing on the Dixie, and the opportunities for sport hunting are very good.

We have a very good cooperative relationship with Utah Department of Wildlife Resources. Our wildlife management objectives are basically the same as theirs. As you are probably aware, the Forest Service is charged with managing the habitat, while Utah Department of Wildlife Resources is charged with managing the populations. As you can imagine, there is considerable overlap in our efforts, so a close cooperative relationship pays off for all concerned.

We feel confident that we can meet the wildlife management objectives discussed in our Forest Plan, as well as meeting the other Forest Planning objectives.

LETTER 032

PACIFIC GAS TRANSMISSION COMPANY
160 SPEAR STREET
SAN FRANCISCO, CALIFORNIA 94105-1570
(415) 781-0474

GARY L. WALKER, P. E.
VICE PRESIDENT
ENGINEERING AND CONSTRUCTION
(415) 972-[illegible]

January 16, 1986

Forest Supervisor
Dixie National Forest
82 North 100 East
Cedar City, Utah 84720

Subject: Dixie National Forest Proposed Land and Resource Management Plan and Draft Environmental Impact Statement (DEIS)

Gentlemen:

Pacific Gas Transmission Company (PGT) appreciates the opportunity to review the Proposed Land and Resource Management Plan and the Draft Environmental Impact Statement for the Dixie National Forest and hereby submits the following comments on the documents.

PGT owns and operates a natural gas pipeline in the states of Idaho, Washington and Oregon. Our Company is engaged in proposed projects to expand its existing facilities in these states and to build and operate new pipeline facilities in the Rocky Mountain states of Wyoming, Utah and Nevada (Rocky Mountain Pipeline Project (RMPP), Application No. U-45957 filed with the Bureau of Land Management).

PGT respectfully thanks the Forest Service in correctly identifying and including our proposed RMPP in the planning process. From our review of the documents, we find that the Forest Service took into consideration future energy proposals in planning window/corridors throughout the Dixie National Forest planning area. Appendix D, page D-35 of the DEIS specifically cites PGT's proposed Rocky Mountain Pipeline Project in the Newcastle-Veyo window area.

Although the RMPP has been deferred, PGT continues its sponsorship of the RMPP in the belief that a north/south pipeline corridor east of the Wasatch Front is needed and is the best means in terms of environment, economics and national security for transporting substantial volumes of Rocky Mountain Region gas to California.

Thank you again for the opportunity to comment on the Dixie National Forest Proposed Land and Resource Management Plan and DEIS. Please address any questions you may have to M. A. Ryan (415/972-6147).

Very truly yours,

JTK:sj

4. Window Areas (Assumptions, Recommendations, Mitigation Measures, and Adjacent Lands)

a. Newcastle-Veyo

Assumptions

For long-term (10 to 30 years) planning purposes, this window would meet the demand for a major north/south energy transportation corridor in southwestern Utah.

Recommendations

Support a window designation.

Window suitable for overhead and underground electrical transmission and underground pipeline facilities.

Width of window would vary from one to three miles.

General Mitigation Measures

Expansion of access roads associated with existing rights-of-way would not be allowed (no upgrading of roads), i.e., no widening or changing grades. If the access roads were part of existing or proposed Forest Road Development Systems, road expansion would be permitted.

Probable requirement for helicopter placement of towers or other energy transmission facilities in rough terrain.

Transmission lines would not be located over or through developed recreation sites.

Non-specular conductors and towers and compatible insulators would be required.

Dark tower bases would be required.

Line locations through forested areas would have varied widths and alignments, i.e., no long straight tangents, with tangents purposely widened beyond powerline needs in some areas to meet visual resource management objectives.

In addition, those developed for the IPP Environmental Impact Statement, dated July 10, 1979, the IPP Transmission Line Corridors Environmental Assessment, dated September 4, 1981, and the Rocky Mountain Pipeline Project Environmental Impact Statement, dated December 1981 would be applied to electrical transmission line and underground pipeline proposals.

Adjacent Lands

Adjacent lands, administered by the Dixie National Forest, are associated with two corridor classification areas:

(1) Pine Valley Mountain Wilderness Exclusion Area.

(2) Pine Valley District Avoidance Areas.

Energy transportation proposals for locations outside the window area and within the exclusion area would be denied. For areas outside the window area and within the avoidance area, proposals would be considered on a case-by-case basis. Such proposals would be required to meet all site specific mitigation measures established for the avoidance area, prior to acceptance and evaluation of applications.

b. Interstate 15

Assumptions

For long-term (10 to 30 years) planning purposes, this window would meet the demand for a major north/south coal railroad transportation corridor in southwestern Utah.

Recommendations

Support a window designation.

Window suitable for both overhead and underground electrical transmission line facilities, underground pipeline facilities and railroad facilities.

Width of window would vary from 100 feet to 1½ miles on the National Forest portion. (See Energy Transportation and Utility Corridor Map for window boundaries.)

General Mitigation Measures

General mitigation measures would be the same as those listed under item 4a. Newcastle-Veyo Window.

In addition, those measures developed for the Kaiparowits Coal Development and Transportation Study, dated January 19, 1980, would be applied to electrical transmission line, underground pipeline, and railroad proposals.

Adjacent Lands

Same as 4a Newcastle-Veyo Window Area.

c. Three Creeks

Assumptions

For long-term (10 to 30 years) planning purposes, this window would meet the requirements for railroad transport facilities as addressed in the Kaiparowits Coal Development and Transportation Study, dated January 19, 1980.

Recommendations

Support a window designation.

St. Geo. Ut
16 Jan 1986

Calvin Bird
Forest Planner
Dixie Nat. Forest

Dear Mr Bird, as chairman of the Dixie Soil Cons. District I would like to convey to you some of the concerns we have concerning the proposed management plan for the Dixie Forest. I'm sure we will agree that changes will probably come. Increased numbers of people will see to that. We would support plans to expand and harden more recreational areas. We do feel that development of these areas and development of wildlife and fish habitat should not encroach or interfer with established piplines or other conveyance systems for irrigation, culinary water or other established uses. Also we have a concern about the effects of the proposed plan upon the livelyhood of those who have used forest resources for many years. The plan indicates that over all grazing AUMs will not be cut back but certain areas may be cut and others increased. This still works a hardship on those who are cut and we hope this will be held to a minimum. Another concern is the effect of increased wildlife upon established grazing permittees and adjacent private lands especially during winter on these private

RESPONSE TO LETTER 033

The Forest's program of securing minimum instream flow needs should not conflict with the operation of any existing water diversion or transmission facilities on National Forest land. Changes in points of diversion for existing facilities and new diversions will be considered on a case by case basis. These proposals will need to allow for the identified National Forest instream flow requirements if they involve enlarging the extent of dewatered or reduced flow in surface waters (e.g., moving points of diversion further upstream, constructing diversions on previous unimpacted streams, or significantly increasing the volume of diversion at existing facilities.

We realize the hardships caused if decreases in AUMs are necessary, and will do everything reasonable to avoid this.

This is a legitimate concern. In our coordination with UDWR, it is important that we consider all involved activities including adjacent private lands when we make plans to increase big game herds.

We, too, are concerned about the spread of noxious weeds. We are taking all efforts possible to control them.

New prescribed burning is one of the most efficient habitat manipulation tools available to us. We plan to make maximum use of prescribed burning in the future.

lands. At the present time private lands on Smith Mesa and around Virgin are being used heavily by deer. Possibley other areas also. — Another problem we are concerned with is the spread of noxious weeds from public lands. We can support whole-heartedly the use of controlled burns to encrease feed for wildlife and also domestic livestock

Sincerely Don F Schmutz
Ch. Dixie Cons. Dist.

RESPONSES TO LETTER 034

Department of Water and Power the City of Los Angeles

TOM BRADLEY
Mayor

Commission
JACK W. LEENEY, *President*
RICK J. CARUSO, *Vice President*
ANGEL M. ECHEVARRIA
CAROL WHEELER
WALTER A. ZELMAN
JUDITH K. DAVISON, *Secretary*

PAUL H. LANE, *General Manager and Chief Engineer*
NORMAN E. NICHOLS, *Assistant General Manager - Power*
DUANE L. GEORGESON, *Assistant General Manager - Water*
NORMAN J. POWERS, *Chief Financial Officer*

January 15, 1985

Mr. Al Schuldt, Forest Planner
Dixie National Forest
82 North 100 East
P.O. Box 580
Cedar City, Utah 84720

Dear Mr. Schuldt:

Draft Environmental Impact Statement
Dixie National Forest Management Plan (Plan)

This is in reply to the letter dated October 4, 1985 from Mr. John V. Lupis requesting comments on the above-named Plan.

The Department of Water and Power (DWP) has reviewed the Draft Environmental Impact Statement and concurs with the designation of a utility corridor along the Intermountain Power Project (IPP) transmission line. Associated with the IPP are microwave facilities within the Dixie National Forest. These microwave facilities should be shown or acknowledged in the Plan.

I appreciate the opportunity to provide you with DWP's Power System comments. If you have any questions or desire additional information, please contact Mr. Kemp M. Anderson at (213) 481-3448.

Sincerely,

James P. Mieding
JAMES P. MIEDING
Assistant Engineer of Environmental
and Governmental Affairs

cc: Mr. Kemp M. Anderson

111 North Hope Street, Los Angeles, California ☐ *Mailing address*: Box 111 Los Angeles 90051
Telephone: (213) 481-4211 *Cable address*: DEWAPOLA

Microwave facilities associated with the Intermountain Power Project transmission line on the Dixie National Forest are located on Big Mountain. Big Mountain has been designated as a Electronic Site in the Land and Resource Management Plan. Refer to the Draft Land and Resource Management Plan, page IV-22; this designation will remain the same in the Final Plan.

Marvin and Pamela Poulson
3631 South Carolyn Street
Salt Lake City, Utah 84106

January 16, 1986

Dixie National Forest
Attn: Forest Planner
82 North 100 East
P.O. Box 580
Cedar City, Utah 84720

Dear Forest Planner:

The following represents our comment on the proposed Dixie National Forest Plan and EIS. We appreciate this opportunity to participate in a meaningful way in the forest planning process and trust that our concerns, comments and recommendations will be incorporated into the final plan. We believe that only through far sighted planning and perceptive, diligent implementation will the natural, recreative and economic values be adequately balanced.

We are frequent users of the Dixie National Forest and have a deep appreciation for the diversity and uniqueness the different sections this Forest offers. We are very familiar with large portions of the Boulder Mountain-Aquarius Plateau-Table Cliffs Plateau complex and the Markagunt Plateau and much of the eastern slope of the Pine Valley Mountains and adjacent BLM lands.

Our recognition of these valuable areas goes beyond recreation values. We are actively involved in studying the flora of these areas and the range of habitats available which harbor some of Utah's most interesting and unique biotic communities,

Because of this, we want very much to see that forest management of these areas is kept at the highest professional level and that multiple use is not reduced to catering to the economic values available on the Forest.

Please keep us apprised of developments related to this process, including a complete copy of the final plan and subsequent documents which may be forth coming.

Dixie National Forest
Land and Resource Management Plan Evaluation

INTRODUCTION

The Dixie National Forest Land and Resource Management Plan, is an involved undertaking. None-the-less, the public deserves a more balanced and thorough plan statement than appears in the draft. Furthermore, you do not seem to consider the potential readers or implementers of the plan and environmental impact statement. Specific management direction, implementation detail and predetermined policy are unclear or completely lacking. In addition, the information is frequently unclear, facts are buried, the use of acronyms and procedures that are not defined in your glossary also make reading the report overly complex. The results of these general inadequacies and ambiguities, if uncorrected, could foster inconsistent management decisions and even mismanagement of the forest because of confusion.

Effective implementation of the plan should include more precise statements of policy, management direction and implementation detail. This would aid significantly in building a solid foundation for forest managers in administering the diversity of the Dixie National Forest consistently. The resulting professional base would contribute significantly to public recognition of the responsible approach the Forest is taking in the care of its trust.

By making the plan more "user friendly" the public could become more involved in caring out the objectives of the plan. In fact, it seems that professional forest managers would be much better equipped to practice what the plan preaches if the information in the documents was presented more clearly.

THE PLAN

As for the content, including the preferred management alternative, a few comments seem appropriate. The alternatives are diverse but seem exclusive of flexibility, generally favoring economic interests at the expense of natural factors.

We are both active members of various native plant societies including the Utah Native Plant Society and Pam is a Graduate Student studying Phytogeography. We are particularly concerned with your view of vegetation. We strongly believe that the forest as a whole has intrinsic value as vegetation, for vegetation sake, and deserves recognition for its own merit. The Forest Plan should recognize this in areas other than only wilderness.

In the plan you don't seem to really care too much for pro-active

The glossary has been added to and portions have been rewritten to clarify meanings and eliminate ambiguities.

management and preservation of the native forest plant communities and natural vegetative succession. You speak of vegetation only in terms of habitat, range improvement, vegetative manipulation and timbering. No management approach is presented that would assure preservation of ecosystem constituents not directly sought in a harvest prescription.

Diversity. In The Plan you speak positively of retaining and fostering diversity on the forest, but offer no direct management prescription aimed at assuring retention of natural diversity. What of the vegetation as vegetation? Mistletoe, for example, and even the Pine Bark Beetle, are natural steps in forest succession. An old growth climax community becomes affected by these problems as a successional step to improved forest by natural selection and the opportunity for new growth. For the sake of the recreators, we do not suggest you ignore the Pine Bark Beetle, but the "eyesore" Mistletoe is a subjective matter. Leave it alone. It's part of the forest and belongs as an element of diversity.

Diversity. Perpetuation of any natural ecosystem depends heavily on the breadth of diversity within the environment. Of the many elements of diversity, plants represent the largest block of constituents and the basic source of sustenance for animal life. One third of all "Sensitive" plant species in Utah depend on forest ecosystems. Clearly, conservation of Utah's floral diversity will be, in large measure, a function of what happens on lands administered by the Forest Service.

The National Forest Management Act (NFMA) requires Forest Service plans to "provide for diversity of plant and animal communities based on the suitability and capability of the specific land area...."

In order to implement the NFMA diversity mandate, both the Forest Service must have a clear understanding of what diversity means in the context of forest planning. From both a common sense and legal standpoint, diversity is the total variety that exists in the biotic communities of each national forest, both through time and in space. The array of all species of plants and animals constitutes this total variety. In order to provide for diversity, the Dixie Forest must devise management strategies to preserve all such species. And then implement and enforce those strategies. Practically speaking, this means that the least common species will need the greatest attention. That is the single most difficult challenge facing the Dixie Forest considering the obvious priority of implementing "resource harvest prescriptions".

The NFMA implementing regulations focus on maintaining viable populations of vertebrates and rare invertebrates and plants

You are correct in your assumption that the Forest Service views dwarf mistletoe as an eyesore in sensitive visual areas traveled by the public and as an important cause of growth reduction and mortality in tree species. Where the parasite has been present for a long time, the stand will contain deformed, stunted, spike topped, dying and dead trees. The dwarf mistletoes are serious parasites of most Western Conifers in the family Pinaceae and the losses they inflict are of great economic importance. Complete evaluation of losses have not been documented but the best available estimates suggest that they are as great or greater than those caused by any other tree disease. Under the proposed plan, dwarf mistletoe will continue its existence on the Forest. Considerable areas will remain untreated by timber harvest. The fact is that a goal of the total eradication of dwarf mistletoe would be economically unsound and practically impossible. Even localized treatment of timber stands by the removal of diseased trees will not eliminate dwarf mistletoe. Long distance reintroduction into treated stands will still occur from seed transported by birds and mammals. The Implementing Regulations of the National Forest Management Act state in 36 CFR Part 219.27 management requirements, [3]

> "Consistent with the relative resource values involved, prevent or reduce serious, long lasting hazards and damage from pest organisms, utilizing the principles of integrated pest management. Under this approach all aspects of the pest-host system should be weighed to determine the situation - specific prescriptions which may utilize a combination of techniques including, as appropriate, natural controls, harvesting, use of resistant species, maintenance of diversity, removal of damaged trees, and judicious use of pesticide.", etc.

Direction in the Forest Service Manual tells us that Forest management activities should not be responsible for the elimination of any species, plant or animal, from its native range. We adhere to that direction.

represented by management indicator species. Five categories of species are required to be represented in the Plan: recovery species (taxa that are state or federally listed as threatened or endangered), sensitive species (taxa listed by the Forest Service as regionally or locally rare), featured species such as game animals, specific habitat indicators (e.g., taxa associated with old growth forests), and ecological indicators (e.g., taxa whose changes in population level indicate changes in water quality). The inclusion of threatened, endangered and sensitive plants in highly significant since the Plan must also establish strategies for the maintenance and improvement of habitat for all five categories of management indicator species. This also relates to enforcement policy.	**Your interpretation of the NFMA regulations is correct, except that species in the S categories discussed are to be selected "when appropriate". We have selected those MIS that we feel will best indicate effects of management activities.**
For completeness, we suggest that you amend the list of sensitive taxa fails to at least include the rare Coryphantha missouriensis var. marstonii (Clover) Benson, which has been reported from the slopes of Boulder Mountain.	**As time permits, management strategies for all plants listed in the plan are being completed. The lack of discussion does not mean we are ignoring these species. On the contrary, we are taking all reasonable measures to protect them.**
In addition to the list, a discussion of how habitat for each management indicator species will be maintained and improved, and description of procedures for monitoring populations and other important factors concerning each rare plant species presented.	
We are disappointed that you feel plant resources for other than timber and grazing potentials are unimportant. This is made obvious by the fact that while several pages are spent considering indicator species of wildlife, and listing, discussion and plans are given for endangered and sensitive wildlife and fish species, only brief mention of the sensitive plant species is made and no management direction provided for them.	
RNA's. While three potential RNA's are mentioned in the Plan and EIS, no description is provided as to the procedural requirements and management strategies directed at rare taxa included in these areas. This lack of clear rational makes identification of RNA's appear to be arbitrary and raises question as to why other significant ecosystems are not being considered.	
To this end, we suggest consideration of at least two others. 1) The eastern flank of the Pine Valley Mountains between the Forest boundary and the wilderness boundary, south of Black Ridge and North of Silver Reef. This area represents one of the richest transitional life zones in Utah and is total unique in the region. Diversity rains here, with the mingling of Great Basin, Mojave and Colorado Plateau species. It would even be desirable if the Dixie could arrange to mesh such and RNA with an adjacent BLM RNA to complete the habitat type. However, we realize such a bold step may be beyond the grasp of bureaucracy.	**We are considering an RNA on the eastern flank of Pine Valley Mountains. The area is going to be analyzed thoroughly before a decision is made.**

2) The "Twisted Forest" near Cedar Breaks is also a viable candidate for RNA's status, having already gained some acclaim among scientists as a study site for erosional and dendrochronological investigations. In terms of the dominant tree species found here (Pinus longaeva), the site has yet to yield its full potential in dendrochronologic climate and chronology studies.

The Twisted Forest is in the Ashdown Gorge Wilderness and will not be considered for RNA designation.

Now, what is holding up designation of any of these potential RNA's? What is the time frame for designation? How will they fit into the management of the forest?

The RNA's will be designated in the next couple of years.

Noxious and poisonous plants are discussed very briefly, however, you fail to place the current problem in historical perspective. Most of these plants have become a problem in terms of livestock grazing because of gross overgrazing and range mismanagement in the past. Even though these abuses primarily date back to the early part of the century, the imbalance they created has not been overcome, even with active range management programs such as those that have been practiced on the Wasatch Plateau in the Manti La Sal National Forest. Many of the plants discussed are native species that "invade only when competition with other plants preferred by livestock have been grazed off." The position taken in support of increased grazing in the Plan is of great concern because much of the range cannot currently sustain the grazing pressures placed on it, let-a-lone recover to desirable vegetative quality.

We are not proposing increased grazing. Our preferred alternative would have 115,000 AUMs as is currently the permitted use.

Coupled with the range issue is the cumulative effect of grazing, timber harvest and other development. The benchmarks selected for measuring "resource harvest" impacts must be made in the context of the full array of impacts and not just the one immediately at hand.

We think that these questions should be addressed and a full analysis presented to provide direction to managers, users and interested publics during the planning period.

Future Wilderness is quickly dismissed, seemingly as virtually irrelevant to the planning process. Many of the roadless areas that were identified during the RARE II process remain as pristine as ever. The mere designation of the Box Death Hollow, Pine Valley Mountain and Ash Down Gorge Wildernesses does not necessarily mean that other areas of the Forest shouldn't be managed as roadless areas. In fact, it may well be that some areas will be recognized for their wilderness character during the term of the Forest Plan. Comprehensive management of the Forest must include all aspects of multiple use management, including wilderness, and if found should be recommended for

The Utah Wilderness Act of 1984 specifically states: "(a) unless expressly authorized by Congress, Department of Agriculture shall not conduct any further statewide roadless area review and evaluation of National Forest System Lands in the slots of Utah for the purpose of determining their suitability for inclusion in the National Preservation Systems". The released lands are to be managed for multiple use. We have planned that some areas may remain roadless. We have added a no-surface occupancy stipulation for mineral entry in some areas. Also, an off Road Vehicle management Appendix is being developed to restrict vehicle use in areas where such use would conflict with planned management emphasis.

designation. Unless the implementation of Plan actively manages roadless areas to maintain their wild character, they will be lost by default forever. The benchmarks used for evaluating these areas must not be administratively eroded.

Implementation. In general, implementation is treated in as a passive approach to management which is partly justified by the presupposition that funding levels will preclude desirable management implementation and enforcement. It seems entirely inappropriate to design a management plan, which is supposed to present the best approach to forest management, around the unknowns of "possible" budgetary limitations. The plan should be designed to stimulate the budgeting process on the basis of need and not assume an arbitrarily established stance that preempts the funding role that only Congress can play.

Even though actual budgets will likely be less than professional management judgement would establish, it seems that one of the things the Forest Plan should be geared to is to stimulate a more realistic approach from the ground up. This is part of a pro-active management stance we see missing from the plan,

Watershed values are subordinated by emphasis on range and timber development. Given the condition of the watershed, range and timber development proposals threaten to degrade an already tenuous situation. Greater attention should be given to water issues in order to bring balance to resource development. This ties back to consideration of cumulative "resource harvest" impacts.

Minerals. In context with all resource developments, consistent and well defined management policy for mineral development should include a system of decision points. Such an approach assures that development meets the Forest Plan and prevents "nickel and dime" or piecemeal resource development. For example, the decision system could include trigger points for preparation of EAs and EISs according to past, current and development anticipated in the Plan. This method would include the full range of resource developments under a comprehensive scenario in order to maintain forest management control of all resources in relative balance.

Summary

All in all, we see significant management imbalance in the proposed Forest Plan among economic exploitable resources and natural, aesthetic or recreation resources. This must be

The plan does not have budgetary limitations, there is a 40% increase in costs. The Plan provides the direction for the professional management of the Forest.

As a result of the Forest Planning process, the Forest management has determined that watershed values should have increased emphasis in future resource management programs. A more rigorous program in watershed restoration and soil/water conservation is provided for in the Forest plan.

Locatable minerals All NFS lands are open to location under the mining laws unless specifically withdrawn. The Miner has statutory right of ingress and egress, and right to explore, develop and produce for the specific locatable mineral. Before conducting an activity that will impact the NFS surface resources, he must give the Ranger a Notice Of Intent to operate. At that time, the Ranger determines if an EA is needed... definitely needed if significant impact will result. The EA determines if an EIS is needed or not. An environmental analysis is conducted at each stage of mining.

Leasable minerals (primarily oil and gas). The Ranger conducts an environmental analysis for every request for preliminary prospecting permit (seismographing). For leasing, until the Forest Plan is completed, we continue to prepare and use oil and gas leasing documents which stand on their own in terms of analyzing the environmental effects of leasing. The preparation of an EIS on each leasing proposal speculating about the potential environmental impacts of a possible development proposal would be impractical, costly to the government, and greatly slow down the rate of leasing. We believe that a more practical reasonable approach is to do staged environmental analyses starting with the development of stipulations needed to protect environmental values at the lease issuance stage followed by detailed environmental analyses of site specific exploration of development plans submitted by the lessee.

Saleable Minerals (sand, gravel and other common varieties). The Forest Service has the authority to dispose of these, whereas the authority for locatables and leasables presently rest with the BLM, USDI. The Ranger determines how, when, and where and issues permits in accord with NEPA and other laws and regulations.

rectified if long term perpetuation of multiple resource values on the Forest are to be maintained.

We want, very much, to see that forest management of the areas under your care are kept in balance and at the highest professional level, seeing that multiple use is not prostituted to catering to the economic potential available on the Forest.

Development threshold levels should be established which will trigger preparation of a full EIS which will take into account cumulative development impacts of the proposed current action in context with similar passed actions, related future actions and unrelated actions anticipated in the forest plan. The EIS analysis should include best and worst cases as well as the actual degree of anticipated development impact. Example: The first request to drill on an oil/gas lease within an allowable area may be handled with the EA process, assuming other factors do not indicated the need for an EIS, i.e., timber harvest in proximate association with the proposed drilling activity. Whenever more than one development action have been or are proposed, whether one being current and the other planned in the future, or both currently proposed, an EIS is mandated.

The threshold trigger is an imperative management tool which should lay out the rules of the game in advance to assure consistent, multiple use management.

Natural diversity in the Dixie National Forest is of great concern, particularly in the face of proposed "resource harvests". Maintaining an ecologically viable "mix" will be critical to the survival of many known and yet to be recognized species. The task of retaining the breadth of diversity begins now. Like wilderness, the diversity of the forest today is all we have to work with. History has shown that wilderness and diversity can only diminish, because it is impossible to recreate what has been lost.

While we have tried to identify some "negatives" in the draft plan, we would be less than fair in acknowledging the many positives included in the document. Hopefully, you realize that we present our perspective in the interest of identifying those points that we believe require additional attention, with the aim of assisting and contributing a degree of diversity to the planning process.

Thank you,

Pam

Marv and Pam Poulson

Chevron U.S.A. Inc.
700 South Colorado Blvd., P. O. Box 599, Denver, CO 80201

M. M. (Lisa) Flesche
Staff Analyst
Legislative and Regulatory Affairs

January 17, 1986

Dixie National Forest
Proposed LRMP and DEIS

Mr. Alden T. Schuldt, Forest Planner
Dixie National Forest
82 North 100 East
P.O. Box 580
Cedar City, Utah 84720

Dear Mr. Schuldt:

Thank you for the opportunity to review and comment on the captioned documents. You and your staff have done an excellent job of recognizing the need to integrate mineral resource development into your multiple-use management plan.

As a Dixie leasehold owner, we support the choice of Preferred Alternative B as a reasonable approach to ensure continued oil and gas activity with minimal adverse impacts. However, we request that a map be included as a part of the Management Area discussions, which would indicate which areas are subject to withdrawals, NSO stipulations, seasonal restrictions, and standard stipulations. This would greatly aid our determination of the effects of the proposed plan on our specific operations.

As is evidenced in the plan, we hail your recognition of the fact that through careful planning, oil and gas operations do not destroy surface resources, as many less-informed parties are constantly, vehemently claiming. No doubt the numerous mineral activities that have occurred and that continue to occur on the Dixie have given you valuable first hand knowledge of the compatability of mineral development and other forest uses, as well as the numerous alternatives that can be worked out in order to minimize potential problems. How we wish that other Forest Service planners had your knowledge and balanced perspective!

Sincerely yours,

Lisa Flesche

MMF:kjk

Northern Region — Exploration, Land and Production

We will modify the proposed plan to identify stipulations to lands they apply to by management units. All lands not precluded by law from leasing will be available for leasing. Surface management protection will be provided by the No-Surface-Occupancy (NSO) stipulation or other special stipulations. These will be in the prescriptions for each management unit. An accompanying map will display the management units.

January 15, 1986

SALT LAKE CITY, UT
JAN

Mr. John V. Lupis, Forest Supervisor
Mr. Al Schuldt, Forest Planner
Dixie National Forest
82 North 100 East
P.O. Box 580
Cedar City, Utah 84720

Dear Sirs:

The Utah Wildlife Leadership Council is a council of leaders representing established recreation, conservation and sportsmans organizations within Utah, meeting together to discuss, resolve and promote individual issues of common interest and concern to the affected organizations. The following concerned groups urge you to consider our requests and act accordingly on the issues of concern on the Dixie National Forest long range planning:

Mountain Men of The Wasatch
North American Muzzleloading Hunters Association
Rocky Mountain Fur Company
Utah Bowman's Association
Utah Coalition of Muzzleloaders
Utah Hunter's Federation
Utah Shooting Sports Council
Utah Wildlife Federation

We feel that the alternative in the plan that provides for the most opportunities for increasing our goals of increased conservation, recreation, hunting and wildlife would be the best alternative for not only our group but for the vast majority of forest land users in this state and nation. It appears that alternative "E" would best accomplish this, followed by alternative "B" as a second choice.

Some areas of concern with the proposed plan and forest as a whole are as follows:

It is apparent that this plan, like so many others the Forest Service has implemented, places far too much emphasis on market opportunities, to the point of not being economically sound. How can a government agency continue to let the resources of our forests go for "below cost" such as is being proposed on this forest? Why is it that Utah Division of Wildlife Resources goals are for 2,900 elk on this forest but the plan attempts to limit this to 2,000 elk for the thousands of recreational users from Nevada, California, Utah and elsewhere. We would like to see, not only more elk and deer but better distribution with some transplants of elk to Paunsaguant, Pine Valley Mountains and Cedar Mountain and any other places where a herd might be that is not there now. It is our belief that our state game managers would increase their management objectives if more range on this forest were available to elk.

There are currently elk herds in the three locations you have indicated. All three are small, but habitat is available and they are growing. We are currently developing with UDWR Elk Herd Management Plans, and our elk population goals will be revised when these are completed. The 2900 figure was an early estimate that neither DWR, nor Forest personnel can support.

We can see by this plan that there are approximately 20,000 cattle and 25,000 sheep for 104 allotments.

You will note from Table IV-9 on page IV-22 (DEIS) that both the current program and the preferred alternative show no deterioration of the forage resource, but a gradual overall improvement in range condition. Range analysis data show an ample forage resource to supply the current livestock use and the wildlife population objectives discussed in the Plan.

We recommend that grazing be reduced by at least 25,000 AUM's in order to stop deterioration of forage resources and to allow more equity with wildlife use of available forage.

We also recommend no winter livestock grazing on wildlife habitat and no summer grazing on critical wildlife habitat.

It would be difficult to argue that range users (permitees) pay their way. Not only do they pay only $1.32 per AUM when, as it says in your plan, they should pay $8.06 per AUM. The forest service also pays out huge sums for improvements and range rehabilitation. We do not know the exact figures for this forest but upwards of one hundred million dollars a year are spent nation wide on these rehabilitations. These, so called, rehabilitations can poison our lands and waters with poisons equal to agent orange; 2-4-D, 2 4-5-T, 2-4-5-T-P and others, in order to manipulate plant growth for the benefit of a few grazers. These herbicides are persistant, non-selective, carcinogenic (cancer causing), mutogenic (causing mutations), Teradogenic (affects the unborn) and they break down to form dioxins as previously stated. These vegetation manipulations would best be done with the use of fire when absolutely needed.

The timber harvesting activities are much the same as the grazing, "below cost" but at a high cost to other resources such as wildlife, riparian zones, fish and water. Aspen trees, which are of very little commercial value and extreme importance to wildlife, are treated as though they were of great commercial value and will be way over harvested at below cost in this plan. Old growth Ponderosa are already over harvested and the plan continues this practice at much detriment to the potential for habitat that would sustain a decent number of wild turkey. It appears as though the managers of this plan are determined to ruin the asthetic values of this forest, even if it costs to do it.

The plan states that minimum biological growth standards of 20 cubic feet per acre will not be adhered to. This should be adhered to in order to protect the resource and provide a sustained yield.

The plan states that yields of timber will decrease as time goes by. It is apparent that, as time goes by and the population increases, yields should be increasing instead of decreasing.

The plan also states that road densities would be at 3-4 linear miles per square mile (640 square acres was the figure used). Was this an attempt to hide the fact that these road densities are way over the densities of one linear mile per square mile that most other plans recommend as the maximum road densities that should be allowed in order to protect wildlife from heavy negative impacts and maintain water qualities?

We must protect all non-roaded areas that exist in order to save a few areas of sanctuary that wildlife depends on. This is so important that it should be part of a non-development perscription which would include no new roads or grazing access, mineral development access, timber management access or any other reasons.

he plan calls for logging on slopes over a 40% grade. This, also, is against most other guidelines from other plans reviewed. We feel this would conribute to soil erosion, water quality problems, stream bed siltation and ubsequent fishery damage.

We have no winter livestock grazing on the Dixie. Most livestock come on about June 1 and all are off by the deer hunt. We have some areas which have been designated a critical deer winter range or critical pronghorn range by Utah Department of Wildlife Resources. No critical elk habitat has been designated on the Forest. None of the areas of critical habitat receive livestock use during "conflict" periods (when both species would be present), or do they receive use later in the season when forage critical to winter game survival would be removed. Forage and browse used by big game is monitored. If conflicts arise regarding utilization they will be resolved in favor of big game.

The Dixie National Forest use very few chemicals in vegetative manipulation. Primary activities in the last few years have been very limited use of 2,4-D or Roundup to control noxious weeds invading the Forest from private lands. For your information, both 2,4,5-T and 2,4,5-TP have been banned by EPA and use is prohibited on public or private lands in the United States; 2,4-D is not a persistant herbicide.

A main reason for selection of wild turkey as a Management Indicator Species was so that our monitoring of turkey populations and habitats will prevent over harvest of mature and old growth ponderosa pine in important turkey habitat areas.

You are correct in stating that aspen is presently of little commercial value, locally. When viewed from a national perspective, the aspen resource is gaining commercial importance as new products and processing methods become available. The Dixie Plan projects a very small volume of aspen harvest during the Plan. Modest volumes of aspen harvest are projected beyond the Plan should markets develop. This of course will be reevaluated when the Plan is updated in about ten years. Given the very low costs of preparing aspen sales and abundant natural regeneration, along with a possible increase in aspen values, the economic viability of managing aspen through timber harvest may improve.

The Dixie National Forest has used very conservative fuelwood values in evaluating aspen economics. Aspen is not treated as a species of great commercial value at present as you suggest.

The Forest realizes the extremely important value of aspen habitat to wildlife as well as its scenic value. With proper sale design and road management, timber harvest will improve the quality of aspen for non timber uses. Presently, a large portion of the Forest's aspen (90%) is in a state of declining vigor and many aspen stands are being replaced by coniferous species. The use of fire to rejuvenate aspen on the Dixie is viewed as having limited potential due to extreme fire danger conditions generally necessary to achieve a successful burn in pure stands of aspen.

You make reference to the fact that the Forest has decided to drop the 20 cu. ft./ac./yr. growth requirement for timber to be placed in the suitable land base. This was not the Dixie National Forest's decision but a change made in the Forest Service regulations. The Dixie's position on productivity is found on page III-25 of the Draft Environmental Impact Statement. For the present, the Forest will class these areas (producing less than 20 cu. ft./ac./yr.), as unsuitable pending their inventory and reanalyze the suitability of these lands. If the difference between the existing Forest Plan and the new analysis is significant, the Forest Plan may be revised in accord with 36 CFR 219.1 (g). At present 230,000 acres are classed as "not capable of producing industrial wood" based on the 20 cu. ft./ac./yr. growth requirement and are not included in the suitable land base.

It would be desirable to increase our timber outputs as demand for timber increases. Unfortunately our ability to produce more timber is limited by our suitable land base, resource considerations other than timber, productivity, economics, and growing stock levels. After considering these factors the Forest has concluded that outputs of softwood sawtimber will, in fact, decline in the near future while growing stock levels recover from loss due to a major insect epidemic and while old poorly producing stands are converted to young vigorous ones. In forty years or so our ability to produce these products should return to levels of the recent past.

Sources of lumber supply are national and even international (we import lumber from Canada and Mexico). It is hoped that overall, the nation will be able to meet its own needs for most timber products. If lumber prices are to remain reasonable, you are correct in stating that timber outputs must rise with demand.

Road densities of 3-4 linear miles per square mile (per section) was determined for those land areas designated for intensive timber management. Those areas select were determined to be in the timber base. They are the most stable land areas and were coordinated with other resources in the land management prescriptions.

The Forest is presently developing an Off Road Vehicle Appendix that has been coordinated with wildlife needs and the Forest Plan. Also, a no-surface-occupancy for leasing has been added to offer protection for wildlife needs.

The Forest recognizes special attention be given to logging methods and special measures necessary to protect soil, water, fish and visual resources when logging steep slopes. Cable logging with minimal ground disturbances, buffer zones near streams, the retention of logging debris and residual trees to minimize erosion, and not logging at all must be considered on steep terrain.

Cable logging on other Forests may not be viable due to extremely sensitive anadramous fisheries which do not occur on the Dixie.

Some Forests may not seriously consider logging steep slopes because of the lack of the proper equipment by local loggers combined with too little volume to attract loggers with specialized equipment.

The plan calls for small settling ponds to be constructed. With proper riparian zone protection, beavers could do this work FOR FREE. We cannot over-emphasize the need to protect riparian zones. They should receive protection and grazing should be limited, more than provided for, in this plan along these areas.

Rip Rap should not be used to stabilize stream banks. Natural stabilization should be used. It looks nicer and is more easily utilized by wildlife.

As was previously stated, 25,000 domestic sheep are allowed to graze on this forest for $1.32 per AUM; however, very few wild sheep, which can bring in tens of thousands of dollars each, are allowed to exist on this previously rich, native habitat of theirs. We would like to see areas set aside where wild sheep could be reintroduced without fears of domestic sheep diseases wiping them out. Mountain Goats, Moose and Bear should be able to be re-established to native habitats or established to areas able to support them.

The Forest Service needs to re-evaluate it's priorities and realize the economic potential Utah has by increasing wildlife species and recreational opportunities. These resources bring large numbers of people to a given area (the plan states that over 50% of all people came from Nevada and California). People will spend huge sums of money, nearly 700 million dollars in 1980 in Utah alone (the latest figures available from U.S. Fish & Wildlife Service).

Finally, we would like to thank you for allowing interested groups such as ours the opportunity to participate in this planning process and to, hopefully, be able to help your office prepare a plan that will be of the most benefit for the most people over the planning period.

Sincerely,

Randy T. Nielsen

Randy T. Nielsen
P.O. Box 564
Salt Lake City, Utah 84110

FOR THE UTAH WILDLIFE LEADERSHIP COUNCIL

CC: Senator Jake Garn, Senator Orrin Hatch, Congressman James Hanson, Congressman David Monson, Congressman Howard Nielson.

Serious errors were detected in the mapping of riparian management areas (Prescriptions 9A and 9B) in the draft Land and Resource Management Plan. These errors have been corrected in the final LRMP.

Based upon the comments received on the draft LRMP, Forest Management has re-evaluated the riparian area management prescriptions, particularly as they regard riparian area condition and grazing management. The lack of information currently available on the condition of riparian areas across the Forest is an impediment to the effective management of these important resources. To rectify this situation, an accelerated multi-disciplinary riparian area condition inventory is proposed for implementation within the first 5 years of the planning period. Information on impacted riparian areas acquired in this effort will be used to develop riparian area management plans addressing specific measures needed to improve a degraded area. This approach recognizes that there are different factors contributing to the condition of any particular degraded area. These problems require careful site specific evaluation to develop effective measures to induce recovery.

Grazing management policies in riparian areas geared primarily to Forest-wide forage utilization levels restrict the land manager in implementing innovative livestock management techniques which may provide more effective means to maintain streambank stability, riparian vegetation and other factors commonly impacted by livestock. Nor do they recognize the differences in productivity, stability, vegetative structure and response to grazing that occur among the riparian ecosystems found on the Forest. A more site specific management policy is proposed for livestock grazing in riparian areas.

Forest Service policy recognizes that riparian areas are "among the most productive, sensitive, diverse and often most geographically limited ecosystems within National Forest lands". These areas are capable of supplying a wide range of high quality resources if properly managed. Where resource management activities result in tradeoffs, a careful evaluation is required to produce a proper mix of resource outputs. We recognize that because of the tradeoffs necessary in multiple use management of riparian areas, some resources will not be produced at their maximum potential. However, we do believe that the resource output goals of this plan maximize the net public benefit derived from riparian areas. At the same time, it provides for the maintenance of healthy riparian ecosystems, protects water quality and water delivery related values, and allows for the recovery of currently degraded areas.

Natural streambank stabilization measures are preferred over rip rap and will be used when appropriate.

Desert bighorn sheep currently occupy lands within Capitol Reef National Park and in the Glen Canyon NRA. Reports indicated that sheep have been sighted as close to the Forest on the Tropic area. We would welcome this addition to the Forest's fauna and don't expect any habitat overlap with domestic sheep. There is no habitat for mountain goats or moose on the Dixie. There are numerous bear sightings yearly on the Forest. Harvest is small.

LETTER 038 IS MISSING AT THIS TIME.

January 15, 1986

Mr. John Lupis
Forest Supervisor
Dixie National Forest
82 North 100 East
P.O. Box 580
Cedar City, Utah 84720

Dear Mr. Lupis:

The Utah Hunters Federation would like to make the following recommendations in regard to the proposed Dixie National Forest Land and Resource Management Plan and Draft Environmental Impact Statement.

1. We recommend that the Utah Division of Wildlife Resources be allowed to begin to transplant elk to the Pine Valley Mountains in Washington County in 1986 and 1987. Long-term planning should allow for the growth of this elk herd.

2. We recommend that the Utah Division of Wildlife Resources be allowed to transplant mountain goats and bighorn sheep to all suitable habitat in the entire Dixie National Forest.

3. We support the closure of some Forest Service roads in the Dixie National Forest (either permanently or during the big game seasons) where such closures would improve the quality of hunting or benefit elk and other big game species.

4. We believe that the construction of new roads to facilitate logging, or other multiple use programs, should be kept to an absolute minimum on the Dixie National Forest. The high road densities proposed for logging activities in the Management Plan are too high. Such road densities would have a negative impact on wildlife and recreation. When new logging roads are authorized, provisions should be made for their closure when the logging activity ceases if this will benefit big game populations or enhance quality hunting.

The Utah Hunters Federation is a nonprofit group of over 800 sportsmen dedicated to restoring and improving the quality of hunting in Utah. We support the concept of multiple use of public lands, but we believe that game animals should receive equal consideration to livestock in planning for public land use. The aesthetic, recreational, and economic contributions of game animals to the quality of life in Utah should be a determining factor in your decisions.

Sincerely yours,

Steven G Johnson

Steven G. Johnson
317 "C" Street
Salt Lake City, Utah 84103
(801) 322-4909

SGJ/nj

RESPONSE TO LETTER 039

Elk are currently established in the Pine Valley mountains and the herd is growing. DWR and Forest personnel will continue to monitor this herd for future management considerations.

There have been no proposals for goat transplants for this area.

We concur with your statement logging road "should be kept to an absolute minimum". The road densities proposed are based on the most economical logging methods with the minimum impacts on the other resources. The road management preycription in conjunction with the area management determines which, and the periods of time that certain roads will be closed.

United States Department of the Interior

OFFICE OF THE SECRETARY
OFFICE OF ENVIRONMENTAL PROJECT REVIEW
Denver Federal Center, Building 67, Room 488
P.O. Box 25007
Denver, Colorado 80225-0007

IN REPLY REFER TO:

January 14, 1986

ER 85/1513

Mr. John V. Lupis, Forest Supervisor
Dixie National Forest
82 North 100 East
P.O. Box 580
Cedar City, UT 84720

Dear Mr. Lupis:

We have reviewed the proposed Land and Resource Management Plan (LRMP) and draft environmental impact statement (EIS) for the Dixie National Forest, Utah and offer the following comments.

Fish and Wildlife Resources

We believe the best gauge for planning and actual operations would be to examine demand and benefits provided (EIS, Table II-10). Clearly, the analysis shows recreation and fisheries and wildlife programs providing the greatest benefits (74% of total) now and the greatest potential for increase. Coincidentally, these have the least environmental impact. The documents indicate recreation demand will increase 4-5 times in the next 50 years. We believe that demand for fisheries (570% increase, Plan II-21) and wildlife would increase similarly if the Forest provided the resources. However, it appears that only a slight increase in use is anticipated, presumably because the demand will not be met.

We recommend that Alternative E be selected, or that the proposed preferred alternative be modified to emphasize maximizing wildlife populations. This could be accomplished with minor losses of benefits to the timber and range programs, whose overall benefits (10% of total) are only a minor part of the benefits provided by the forest. Additional benefits to range conditions, watersheds, soils, and riparian habitats would be realized. The current plan indicates that it will take 50 more years to elevate the areas in poor range condition to fair or better. The range program should be modified to more intensively address past overgrazing problems.

Where private land ownership or management choices by Federal and State agencies appear to be constraining the Forest's potential production of fisheries and wildlife resources, the Forest should strive to work cooperatively, forge agreements, trade lands, etc., to remove these limitations on production of these resources. Transplants should be considered where fisheries and wildlife populations can be improved more rapidly. Winter range for elk should be developed wherever possible.

An intensive analysis of the costs and benefits and the tradeoffs of the various alternatives was accomplished before selection of the preferred alternative. We feel that the alternative selected as preferred offers the best balance of resource outputs and environmental protection.

We are working to accomplish all these things.

Past experience with other forests and limited experience with the Dixie has been that inventory data for raptors and migratory birds of high federal interest has not been adequate to make the balanced decisions needed for multiple use management. The proposed Plan does not provide a clear policy to inventory, or protect habitats for, sensitive species on all site-specific activities. The Dixie provides habitat for a number of species on the "Migratory Birds of High Federal Interest" (MBHFI) list for the coal program. Species placed on this list are particularly sensitive to disturbance, receive special protection under law, or may be declining regionwide. We believe that these species should receive special consideration in all management efforts, not just the coal program.

We are encouraged by the interest expressed in improving and monitoring riparian habitats. We strongly support these efforts. However, we are concerned that the general Standards and Guidelines for livestock use of riparian forage and browse are too high. We believe the Standards and Guidelines should be modified to further reduce overall forage use. Also, it is essential that adequate levels of staffing be available to complete the monitoring program.

Similarly, we are seriously concerned about the timber harvest levels and resultant impacts on snags. We note that the Standards and Guidelines address numbers and types of snags to be provided. We are confused by the discrepancy in the numbers of snags left under the Standards and Guidelines, as opposed to the Plan's General Direction (Plan IV-25). Why don't they agree? A more generic comment is that we are very concerned about the intensity of harvest apparently being conducted on the forest, the number of snags left, the location of the snags, and old-growth management. Historically, it appears that ponderosa pine was harvested wherever possible with old-growth only left in drainages where it could not be harvested. Are snags inventoried prior to a sale? Are they marked? Are adequate snags left after firewood cutting is completed? How intensively are snags protected? The habitat in terms of snags, age, and canopy coverage should be responsive to the needs of the affected bird species, especially the MBHFI. The Standards and Guidelines for snag retention should specify new approaches to management that will correct past problems. This could include presale planning, road closures, monitoring, etc.

We suggest using timber harvest to manage for more beneficial resources (as discussed previously) such as recreation, wildlife, fisheries, and riparian vegetation, with revenues from sales being of secondary importance.

To summarize, we believe there are a number of positive aspects to the preferred alternative (B); particularly addressing needs for riparian habitat management, stream habitat improvement, and standards for maintaining snags for cavity nesting birds. We believe that the Forest's plan, while providing benefits to wildlife, still does not fully recognize the needs of fisheries and wildlife. It should consider de-emphasis of programs such as livestock and timber while using these programs to improve riparian, fisheries, and wildlife habitat.

The U.S. Fish and Wildlife Service (FWS) would be pleased to work with you in resolving the issues discussed in these comments. We realize that a plan of this scope cannot cover all operational details of management of the Forest. We do believe that the plan should address philosophies of management and priorities for management. Please accept our comments as a constructive attempt to address these issues. We would also like to assist you with more site-specific issues at a future date as time and personnel permit.

... having worked on the coal program, our biologist was not familiar with th list until about a year ago. We have this list now and these bird species are considered in all planning activities which might affect them, even though non are Management Indicator Species.

Serious errors were detected in the mapping of riparian management areas (Prescriptions 9A and 9B) in the draft Land and Resource Management Plan. These errors have been corrected in the final LRMP.

Based upon the comments received on the draft LRMP, Forest Management has re-evaluated the riparian area management prescriptions, particularly as they regard riparian area condition and grazing management. The lack of information currently available on the condition of riparian areas across the Forest is an impediment to the effective management of these important resources. To rectify this situation, an accelerated multi-disciplinary riparian area condition inventory is proposed for implementation within the first 5 years of the planning period. Information on impacted riparian areas acquired in this effort will be used to develop riparian area management plans addressing specific measures needed to improve a degraded area. This approach recognizes that there are different factors contributing to the condition of any particular degraded area. These problems require careful site specific evaluation to develop effective measures to induce recovery.

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Forest Service policy recognizes that riparian areas are "among the most productive, sensitive, diverse and often most geographically limited ecosystems within National Forest lands". These areas are capable of supplying a wide range of high quality resources if properly managed. Where resource management activities result in tradeoffs, a careful evaluation is required to produce a proper mix of resource outputs. We recognize that because of the tradeoffs necessary in multiple use management of riparian areas, some resources will not be produced at their maximum potential. However, we do believe that the resource output goals of this plan maximize the net public benefit derived from riparian areas. At the same time, it provides for the maintenance of healthy riparian ecosystems, protects water quality and water delivery related values, and allows for the recovery of currently degraded areas.

Twenty to thirty snags refers to those in all stages of development; i.e. soft snags, hard snags, those with bark on, those that have lost the bark, etc. Two to twelve snags refer to only the hard snags. Part of the wildlife biologist's input to timber sales is a general inventory of snag numbers (in snags per acre). The majority of the timber operators on the Forest are not interested in snags, other than as a safety hazard. Most loss of snags comes after timber harvest, when the firewood cutters move in. We have an active snag marketing program (the sign says: "Wildlife Tree - Do Not Cut"), especially on the Cedar City District, which receives most of the firewood pressure. A far more effective program is one of public education through newspaper articles, brochures handed out with firewood permits, displays at public contact points, etc. We are increasing this program as time permits.

We are striving to enter a more active program of this sort, especially in the aspen type. Decreasing budgets and the current political climate emphasizing commodity outputs makes "pure" wildlife timber sale more difficult, but we are examining all possibilities.

Endangered Species

On June 24, 1985, the Fish and Wildlife Service's (FWS) Endangered Species office in Salt Lake sent comments to you concerning a biological evaluation for listed species made by the Dixie National Forest in preparation of a draft Environmental Impact Statement for their Forest Plan. They concurred with your determination of "no effect", because no change in land management activities in listed species habitat would occur under the preferred alternative in the Forest Plan.

We have reviewed the Draft Environmental Impact Statement and proposed Forest Land and Resource Management Plan for the Dixie National Forest and have noted several actions in the proposed plan that would "affect" an endangered species. When specific actions are identified which would affect any threatened or endangered species or their habitat, Section 7 consultation with FWS should be initiated.

Water Resources

The Dixie National Forest includes a small portion of the Dirty Devil River drainage. The Bureau of Reclamation, Durango Projects Office, has an interest in this area through the Colorado River Water Quality Improvement Program. This program has identified the Dirty Devil River as a salinity source where control programs are under serious consideration. Two sites for salinity control are located on Muddy Creek, northwest of Hanksville. Injection wells have been proposed at a spring located at Hanksville Salt Wash, and at Emery Salt Wash. At both sites water would be injected into the Coconino Sandstone, a hydrologically isolated geological formation. Both of these sites are from 35 to 50 miles from the Dixie National Forest and forest management changes would probably not impact the salinity control program.

The Bureau of Reclamation is concerned about measures which impact water runoff. The draft documents indicate that an objective of the Dixie National Forest is to increase water yields. Page II-3 of the Land and Resource Management Plan and Pages IV-36 and IV-37 of the EIS indicate that it is not likely that yields could be increased by more than 2 percent through use of vegetative manipulation. Table IV-19 of the EIS shows projected yields far in excess of the 2 percent estimated for the years 1990 through 2000. We feel that the text is not consistent with the table.

Utility corridors were identified on Dixie National Forest lands on Page II-52 of the management plan; Page III-50 of the EIS; and Appendix D, Pages D-5 and D-6. It is assumed that additional utility corridors could be established in the future should demand develop. The Garkane hydroplant, located near Boulder, Utah, has a recognized utility corridor for the 69-kV powerline from Boulder to Escalante but the 4.1 mile, 3-foot diameter penstock is not similarly recognized. The reasons for excluding the latter feature should be explained.

The Central Utah Water Conservancy District has expressed interest in a potential storage reservoir site located about 1 mile south of the town of Hatch, Utah. A reservoir constructed at this site with a capacity of 21,000 acre-feet would extend to within about 1 mile of the Dixie National Forest boundary. We do not feel that any of the proposed management alternatives would preclude realization of this development plan.

We agree that Forest Management practices will not impact the salinity control program on Muddy creek northwest of Hanksville.

The highest projected increase in Forest-wide water yield in Table IV-19 of the DEIS amounts to only two percent of natural water yield. Note that the units of measure for Table IV-19 are thousands of acre-feet.

Forest actions on utility right-of-way applications will follow the established standards and guidelines in the Land and Resource Management Plan. Applicants will be directed to locate proposals within designated corridors. Applicants can apply for rights-of-way outside of such corridors, if the right-of-way locations are within avoidance areas. (Applications for locations that cross exclusion areas will be denied.)

Right-of-way applications for avoidance areas will be analyzed and evaluated on a case-by-case basis. Proposals will only be approved when Forest Standards and Guidelines, as presented in the Land and Resource Management Plan for the area in question, can be met to the satisfaction of the Forest Service.

The 69-kV powerline right-of-way from Boulder to Escalante, Utah, was analyzed and evaluated for possible designation as a corridor. The right-of-way was not designated as a corridor. The analysis and evaluation and resulting decision reflected concerns for visual and recreation resources and land stability. (See Table C, Appendix D, pages 8 through 10, Draft Environmental Impact Statement). Appendix D, page D-31 of the Draft Environmental Impact Statement presents the management direction for this existing right-of-way. This right-of-way will be managed as a single use right-of-way, as authorized by the existing land use authorization to Garkane Power Association, Inc.; the right-of-way width will not be expanded beyond that specified in the existing permit to Garkane.

The 4.1 mile, 3-foot diameter penstock associated with the Garkane Power Association, Inc. Powerplant is discussed in Appendix D, page D-4, Draft Environmental Impact Statement. This right-of-way did not meet the Forest Service General and Specific evaluation direction for corridor planning and designation. The penstock is considered as an "end use" on the Forest, i.e., originating and ending on the Forest. Corridor designations are only considered for existing rights-of-way that pass into or through Forest lands, within an identifiable strip of land, and only where the probability exists that other energy transportation systems may be located within that strip of land. "End use" rights-of-way are generally not considered for potential corridor designation.

Water storage is recognized as essential for effective utilization. The statement on Page IV-22 of the management plan, "Some small, high elevation reservoirs will be abandoned for water storage when large reservoirs are built at lower elevations." is of concern. These referenced reservoirs need to be identified in order that a determination of potential impacts can be made.

We are concerned that the Forest measure and acquire adequate water under its vested water rights. Additionally, the Forest needs to insure that decisions the Forest makes adequately assess off-site and off-forest impacts; and if alteration or diversion of stream flows occur, the Forest must consult with the FWS as required under the Fish and Wildlife Coordination Act. For example, Crystal Mountain's diversion of water on forest land may dewater off-forest lands, resulting in loss of a stream fishery on Bureau of Land Management lands unless the Forest stipulates water flows needed for stream maintenance.

The EIS should assess the potential for impacts on the health of the visiting public and Forest Service employees from drinking water obtained from the many Forest water systems that do not comply with Utah State Drinking Water Standards.

Mineral Resources

In general, the mineral resources sections in the documents (DEIS pp. III-36-42, IV-40-46; PLRMP pp. II-38-44) are adequate; the following comments are provided to help clarify or improve on the minerals data presented.

Approximately 5,000 mineral claims are reported in the Dixie National Forest (DEIS p. 41). The mineral-related activity which led to the establishment of the claims, however, is only briefly discussed. The minerals section of the document could be enhanced by additional information pertaining to past exploration and mining activities related to the following: gold, silver, uranium, limestone, iron, silica sand, building stone, and jasper. Also, maps showing areas in the Forest favorable for mineral resources would serve to provide a clearer perspective of the mineral resource situation. Such maps should indicate active and inactive mining operations, petroleum and carbon dioxide wells, mineral ownership, mineral patents, and mineral leases.

The mineral activity restriction data presented in Table III-23 (PLRMP p. III-37a) would be more useful if it were depicted on a map. Such a map showing areas withdrawn or restricted from mineral-related activity could be compared readily with maps showing mineral favorability to indicate where conflicts might occur.

Table IV-22 (PLRMP p. IV-42) compares acres of land under various oil and gas potential categories (described as high, medium, or low) with areas where exploration and development activities would be restricted by proposed land management practices (restriction categories are total, high, moderate, or low). An explanation of the various potential and restriction categories would improve this part of the document. Similar tables for other mineral resources present in the Forest should be included in future versions of the documents.

Table IV-23 (PLRMP p. IV-43) shows the percentage of areas having high and medium oil and gas potential where mineral-related activities would be subjected to low and moderate restrictions. The value for Alternative A should be 86 percent, not 74 percent. The column labeled "Low Geologic Potential" apparently is mislabeled. It does not show

no specific reservoirs have been identified to be abandoned at this time. Many of these small, high elevation reservoirs are located in remote areas and are difficult to access to maintain. It is probable that in the future some larger resevoirs will be constructed at lower elevations to replace the smaller reservoirs located in remote areas.

We are in the process of identifying needed instream flows across the National Forest. When considering special use permits for diversion of water off National Forest lands, we will routinely consider the impacts of such diversions on the water uses and water rights necessary to the management of the National Forest. We will also coordinate our activities with other Federal agencies to assure that these activities do not conflict with their water rights and water uses.

It is true that currently not all Forest Service water systems comply with the Utah State Drinking Water Standards. However, the Forest is in the process of upgrading all water systems to meet State standards. The water quality of a Forest Service Water System, regardless of whether the water system itself meets state standards, must meet state standards before a water system is opened. Therefore the probability of anyone incurring ill effects from these water systems is negligible.

Mineral related activity was discussed more in depth in draft specialist reports, but the data was determined to be too voluminous for the Forest Plan.

We have adopted your idea. The information is now shown on the map as areas with no surface occupancy sliputation.

An explanation will be added to further clarify the categories.

1. Both are wrong! Value for Alternative A should be 83% in first column and 17% in the second column. Table IV-23 has been revised.

areas having low potential where exploration and development activities would be subjected to moderate and low restrictions. The previous table (Table IV-22) indicates that such areas are nearly 100 percent subject to low and moderate restrictions. This portion of Table IV-23 appears to show the percentage of areas having high and medium potential for oil and gas where mineral-related activities are totally and highly restricted. Subsequent versions of the documents should clarify the table.

National Park Areas

Visual impacts of actions proposed by the plan on nearby National Park Service areas should be considered. We noted (e.g., page IV-33 of the DEIS) a general concern for visual quality as it relates to proposed timber management in the Forest. We appreciate the comment (page IV-59 of the DEIS) that "None of the alternatives would significantly degrade air quality" (the Forest is a Class II air quality area under the Clean Air Act). Nevertheless, we recommend that specific guidelines for timber management near NPS boundaries be developed, with special attention to air quality and visual impacts.

On page II-56 of the Plan is mention of the Forest's Integrated Pest Management (IPM) program, which includes monitoring of pest species. We recommend that future IPM programs developed by the Forest include input from each of the NPS area potentially affected, and provision for assistance to the parks by Forest personnel trained in pest management.

Use of pesticides is described in the DEIS, especially for "weed" species (page III-23) that do not naturally occur in the Forest; potential impacts on non-target organisms in the parks can result if projects are not properly planned.

Another plant management concern is the introduction of exotic plant species such as non-native grasses near park boundaries, where they can escape into the parks.

Cultural Resources

The section on protection and interpretation of cultural resources beginning on page III-9 of the DEIS is excellent, especially the discussion of coordination with other agencies, including NPS. We suggest that similar coordination language could be included with the discussions on riparian habitat management (e.g., Oak Creek and Pleasant Creek flow from the Forest into Capitol Reef National Park), trail management (e.g., the Rattlesnake Trail as it relates to the rim trail in Cedar Breaks National Monument), fire management for all NPS areas near the Forest, and livestock management, especially where encroachment onto parklands occurs.

National Natural Landmarks

Please refer to page II-46 of the Plan. The last sentence of Item 2 should read: "There are five proposed National Natural Landmark (NNL) areas within the boundaries of the Forest." They are:

Garfield County: The Blues of the Escalante Rim
Castro Bluff
Mammouth Cave
Red Canyon - Sevier Fault Area
Wayne County: The West Boulder Mountain Landslide Area

Page IV-59 of the DEIS specifically addresses air quality and the National Parks. The Forest Plan, standards and guidelines in "General Forest Direction" indicate that air resource management will comply with State and Federal air quality standards which are in agreement with Park Service regulations.

Although not specifically stated in the planning documents, we currently coordinate and will continue coordination of our visual management goals with those of the Park Service.

We appreciate your comment on involving the Park Service in our pest management programs. We currently coordinate and share information and assistance in programs where we have joint interests. These include programs such as fire control, information and educational programs, visual management, air quality, and prescribed fire. Should the need arise to provide assistance and share resources with the Park Service on pest management programs, we will.

Where the Forest borders or is near the boundary of a National Park, we cooperate and coordinate with them in all phases of management.

The Forest Service does not officially recognize "buffer strips" along National Park boundaries. We do, however, coordinate closely with the NPS in any management activities we conduct near park boundaries. For your information, we have very specific Forest Service Manual direction limiting or strictly prohibiting the use of "exotic" plant species (other than those which have proven beneficial; e.g. some species/varieties of alfalfa and wheat grasses) anywhere on the National Forest.

Forest will coordinate with adjacent parks on all matters of joint concern.

The last sentence under the heading of Research Natural Areas and Other Classifications should be changed to "There are five proposed National Natural Landmarks: The Blues of the Escalante Rim, Castro Bluff, Mammoth Cave, Red Canyon-Sevier Fault Area, The West Boulder Mountain Landslide Area".

Future versions of the Plan should take into account the five proposed NNL's and avoid actions that could adversely affect the outstanding ecological and geological features of the NNL's. Information on the NNL program can be obtained from Ms. Carole A. Madison, NPS/RMRO (PL), P.O. Box 25287, Denver, Colorado 80225 (FTS) 776-8699.

Specific Comments

Additional specific comments on the draft EIS and proposed Plan are enclosed.

Sincerely,

Robert F. Stewart

Robert F. Stewart
Regional Environmental Officer

Enclosure

SPECIFIC COMMENTS

Draft Environmental Impact Statement

Pages S-11 and 12: The sustained annual yield of timber, changes in tree species and products required to maintain industry at the current level, and assumptions about future markets should be briefly discussd to identify both the goals and problems associated with the harvest strategies, especially in future decades.

Page II-15, c and d: What will be the impact on proposed wildlife habitat improvements and range improvement projects if the overall Forest budget is not increased 22% as planned? Will the 110,000 acres of poor condition range be improved to fair under current budgets?

Page II-16, g: We are concerned that adequate inventories for raptors and other MBHFI have not been completed for areas undergoing oil and gas development. Areas of potentially suitable habitat for nesting should have stipulations attached that will require surveys of suitable sites and allow for their protection. This comment also applies to all alternatives and should be addressed in the Standards and Guidelines of the plan.

Page II-26, c: Why are fewer acres and a lower number of structures proposed for the alternative emphasizing non-market values? It seems that the number should be equal or greater under E unless the improvement projects are to offset impacts from other resource activities. Wildlife and fisheries monies should not be spent to correct or mitigate impacts from other development activities.

Page II-26, e: Aspen harvest management can significantly impact cavity nesting birds. This statement should be rewritten to acknowledge this problem. In a study the FWS conducted in shelterwood cuts of ponderosa pine in central Utah, all cavity nests located were in intermingled aspen stands.

Page II-27, g: Have the coal unsuitability criteria been fully applied for these areas? When will inventories for the wildlife-oriented criteria be completed? This comment applies to all alternatives.

Page II-27, h: The decision to release lands near the Brian Head area (Crystal Mountain?) should consider off-forest values that may be lost as discussed in our general comments. This comment applies to all alternatives.

Pages II-27c and 30c: We are sensitive to the comment that wildlife and fisheries programs do not contribute directly to forest management by providing a source of income. However, we examined the tables and noted that it would cost the federal government $210,000 to increase receipts $27,000 from the range program (comparing non-market versus market emphasis). This increase in cost would nearly pay for the entire wildlife budget under the non-market alternative.

Page III-22: Are the unsuitable range acres being grazed? Are there any areas of declining range condition? Does the plan address them? The plan seems to address suitable range acres only.

The summary should include a statement on page S-12 (following the table) regarding changing products required to maintain timber industry at current levels. Chapter IV of the DEIS should also include this statement.

All alternatives depend upon an increased harvest of hardwood (aspen) volume t
maintain timber output levels and maintain a healthy aspen component on the
Forest, as well as, economic stability in areas heavily dependent upon Dixie
National Forest timber. For every alternative considered in detail an increas
in aspen volume offered for sale occurs after the first decade and continues
through at least the fourth decade. This is also an increase over present
aspen harvest. Costs of aspen management are low but so are product values
assuming present market conditions. Additionally, no substantial market
presently exists near the Forest to utilize the aspen resource. The
reliability of harvest projections beyond the first decade, hinge on the
development of a market for aspen. Some industry interest has been expressed
in the Dixie aspen resource and aspen products have been successfully marketed
in other areas.

Lower budgets would mean less accomplishment every year, so many projects woul
be delayed. All possible alternate avenues of funding or accomplishment would
be explored. The poor condition range would continue to improve, but at a
slower pace.

We shared your concern about raptors and other (MBHFI) Migratory Birds of High
Federal Interest; however, we feel the habitatal need will be provided for in
"Stipulations For Lands of the National Forest System under jurisdiction of
Department of Agriculture".

Alt E. wildlife budget is considerably lower than Alt B. budget. Wildlife and
fish monies are not spent on mitigation or correction of problems created by
other activities.

Some wording added.

The unsuitability criteria were applied to the old Known Recoverable Coal
Resources Areas (KRCRA) using the input from U.S. Geological Survey, USDI. The
study in which we applied the coal unsuitable criteria covered the areas having
HIGH potential within the KRCRA boundaries (in accord with the existing
USDI/USDA agreement). We were in the completion stage of applying the criteria
when the BLM changed their policy and eliminated the KRCRAs. The Forest
Supervisor at the time made a decision to complete the study using the old data
and not start over. Net result- we have studied the major portion of our
commercially - developable coal resource areas, and no further action is needed
to issue coal leases within those areas. However, in the next round of coal
leasing coming up, if industry expresses interest in an area outside of the
area we studied, then we will have to apply the coal unsuitability to that
specific area requested.

We applied the unsuitability criteria, made a detailed report of the areas studied. This was coordinated with the U.S. Fish and Wildlife Service and the Utah DWR.

Designating an area of National Forest as available for exchange in the Long Range Land Adjustment Program, does not place the area in a first come-first serve position. Such a designation indicates that the lands, so designated, no longer yield an overall resource benefit in terms of National Forest management which support the retention of the area as a part of the National Forest System. A typical situation that might create such a management classification would be private lands that through recent changes in use and/or ownership would over time have an adverse effect on the management of the area as a part of the National Forest.

Any exchange proposal must involve lands with such a designation, but before an exchange can be initiated a preliminary exchange is reviewed and approved. The preliminary exchange proposal evaluates the benefits (nonmonetary) of the exchange - in some respects this approaches a mitigation evaluation for the exchange on a Forest-wide basis. Reports from specialists are included as a part of the preliminary proposal evaluation. The approval to exchange reflects an overall benefit to the National Forest system.

Unsuitable range acres are generally not grazed. These lands consist of unstable soil, steep topography, or acres of inherent low potential for forage production. Unsuitable range acres are not specifically addressed in the plan because stocking rates are based only on those lands that are accessible or that can become accessible to livestock, that produce forage and that can be grazed on a sustained-yield basis under reasonable management goals i.e.,suitable range.

There are 110,711 acres of poor condition range on the Dixie, however, none of these acres are considered to be in a downward trend. There are 2,240 acres on the watershed restoration backlog in need of treatment. These acres could be considered to be in a declining range condition. Under the proposed Forest Plan, aggressive action will be taken to treat this backlog during the planning period.

Pages III-28 and 30: Timber harvest rates appear to indicate that timber management markets the highest quality timber that has the best cost/benefit ratio, while not necessarily establishing a stable supply. Planned harvest of the standard component exceeds yield and has exceeded yield for at least the past 10 years.

Page III-35, h: The EIS should briefly indicate how/why the riparian areas should progressively improve. See our general comments on riparian areas.

Pages III-37 and 38: We recommend that the areas which are proposed for coal development have the unsuitability criteria 9-15 reviewed for adequacy of data. We recommend where site-specific inventory data are lacking, that these surveys be completed prior to leasing. Coordination with FWS is required under most of these criteria,

Pages IV-16 and 18: Most of the alternatives would effect "either positively or negatively" on endangered species. If one of these alternatives is selected, the Dixie National Forest would be required to initiate Section 7 consultation. A biological opinion would be written which would determine if the proposed action or actions would jeopardize the existence of species involved.

Page IV-23, b: The statement that riparian area practices and grazing pressures would continue at current levels appears contradictory to the Plan's management prescription 9B. Funds for rehabilitation should be a high priority item and available as needed, not "occasionally" available.

Page IV-38, c: Three to four miles of road per square mile appears excessive and access may be a serious problem to wildlife, especially elk, depending upon the circumstances.

Page D-25, 1.b: UP&L has recently applied for a 138 kV double circuit line which would be constructed in this corridor. BLM has a designated corridor that tied to this corridor, No other interest has been shown for use of this corridor.

An equivalent corridor for the Iron Mountain portion on BLM administered lands was analyzed in the Cedar-Beaver-Garfield RMP/EIS. The corridor designation was dropped for this corridor. Uses of this route are expected to be handled on a case-by-case basis. This route has been analyzed in the UAMPS/UP&L Draft Environmental Assessment as an alternative route for UP&L's 345 kV transmission line. The route does not exceed environmental thresholds but has some visual resource impacts for travelers along Highway 56. The route would exceed VRM objectives on 2.5 miles of VRM Class II and 6.5 miles of VRM Class III.

Page D-28, 3.a: The Newcastle-Veyo Window designation meets the BLM needs on adjacent lands under its control. Current Bureau planning documents designate a corridor which ties to the south end of the window along the UP&L 138 kV transmission line. This window corresponds to industry interest for a north-south corridor in southwestern Utah.

Page D-28, 3.b: The I-15 Window designation in this location conflicts with BLM planning decisions which rejected a corridor on BLM administered land along Interstate 15. A recent UP&L proposal for a 345 kV transmission line utilizing this window was rejected by the Washington County Planning Commission based on visual resource impacts associated with the I-15 travel corridor. Analysis of this corridor in the draft UAMPS/UP&L Environmental Assessment also concludes that electric transmission routing along I-15 would not be desirable.

Yes, the goals of timber management are to market the highest quality timber while meeting timber output goals of each alternative and the constraints necessary to meet the goals of other resources.

The goal of a stable supply of timber is met in theory by the non-declining yield policy constraints. This does not, as mentioned previously, account for a stable supply of the same products. Accelerated harvest responding to the recent pine beetle epidemic, has caused harvest to exceed growth in the "standard component" (old timber plan terminology). The previous timber management plan provides for harvest in the "marginal component" as the proposed plan provides for harvest on similar lands. To keep present harvest levels from declining, aspen and harvest from some additional "marginal" lands are necessary while some marginal lands will simply be harvested earlier. From a timber management and supply to Forest users perspective this is desirable. Overall productivity can be increased by increasing growth rates and minimizing losses to insects and disease. Present timber outputs can be sustained providing markets can be found for aspen. The aspen resource could also be improved for wildlife and to meet long term visual objectives.

Surveys will be completed prior to leasing on those areas not presently covered by unsuitability criteria. Coordination with FWS will be done if and when development is proposed.

We are aware of requirements of Section 7 consultation, and would initiate if circumstances warranted it.

Road densities of 3-4 linear miles per square mile (per section) was determined for those land areas designated for intensive timber management. Those areas select were determined to be in the timber base. They are the most stable land areas and were coordinated with other resources in the land management prescriptions.

The Forest will drop the corridor designation for the Iron Mountain portion of Utah Power and Light Company's 138-kV transmission line from Cedar City West Substation to Newcastle, Utah. This will be done in recognition of and to coordinate with the analysis included in BLM's Cedar-Beaver-Garfield RMP/EIS. Land and Resource Management Plan narratives and maps will be revised accordingly.

The Forest will drop the corridor designation for the I-15 Window area. This will be done in recognition of and to coordinate with BLM planning and Washington County Planning Commission concerns. Land and Resource Management Plan narratives and maps will be revised accordingly.

Dixie National Forest, Specific Comments

Page D-28, 3.c & e: These windows were adopted from the Kaiparowits Transportation Study, 1980. BLM does not have an equivalent corridor to tie to these windows. However, it should be noted that BLM planning documents covering these areas were completed prior to publication of the Kaiparowits Study. Coal development and transportation were not issues when the BLM plans were completed. The Dixie Forest is not in conflict with BLM plans in these areas. When BLM planning is revised for these areas, consideration will be given to the Kaiparowits Study and the Dixie Forest Land and Resource Management Plan.

Page D-29, 3.f & g: These windows are needed to accommodate mineral development in the area. Generally, interest in mineral and energy resources in these areas followed BLM planning. Consequently, there are no existing BLM corridors to accommodate such development. When BLM planning is revised in these areas, consideration will be given to industry corridor needs and the Dixie Forest Plan.

Proposed Management Plan

Page IV-6, Goal 17: When specific actions are identified by the Dixie National Forest that would affect any threatened or endangered species or its habitat, the Forest Service should initiate Section 7 consultation with FWS. This would include habitat improvement projects for the Utah prairie dog, peregrine falcon, or the Bonneville cutthroat trout (when it becomes a listed species).

Page IV-21, Timber: The plan throughout focuses on harvest of mature or overmature timber before natural mortality occurs. We support the need stated here to reserve old-growth timber forestwide. Old-growth ponderosa pine in most cases should not be returned to the available timber base, unless wildlife surveys indicate it is superfluous to their needs.

Page IV-25, #4: We strongly support an aggressive snag policy. However, it is not clear why 20-30 snags/10 acres are left under General Direction and 2-12 snags/10 acres under the Standards and Guidelines. We support leaving 3-6 suitable snags/acre. Timber and firewood cutting should be planned to insure that snag poaching does not occur and adequate trees remain after the area's roads are closed.

Regarding leaving downed logs, we strongly support this Standard and Guideline. We suggest that 50 linear feet be considered a bare minimum and encourage leaving additional lengths of logs.

Pages IV-25 and 26, #5: Aspen should be recognized for its high value as cavity nest trees for birds. All plans for cutting should consider these cavity dependent birds.

Page IV-33, #2C: Special consideration should be given to birds on the MBHFI list. Use of the flicker as an indicator species will probably not be representative of species dependent on specific habitat types or associations.

Page IV-33, #2E: The listing of the Bonneville cutthroat trout is proceeding and should occur early in 1986.

Page IV-33, #4: Please see our other comments on emphasis of resource management. This general direction should indicate that all species should be managed to maximize wildlife benefits due to the public demand and the efficient cost/benefit ratio.

The Forest has revised the Three Creeks Window and Johns Valley-Upper Valley Windows to meet the established Forest Standards and Guidelines for applicable management area prescriptions, and to meet BLM planning concerns in the area in question. This revision is as follows:

Maintain the Three Creeks Window, but add wording to the designation that..."overhead, underground, and surface energy transportation corridors are available within the window, however the entire area is not available"

Relocate the east boundary of the Johns Valley portion of the Johns Valley-Upper Valley Window areas. The east boundary will be set so as not to conflict with the management area prescription for semi-primitive recreation opportunities (2A Areas). The actual location will generally be the areas north and west of the 2A areas in the Henderson Point Peak and Cedar Fork Drainage areas.

Extend the west boundary of the Johns Valley portion of the window to a point just north of the Bryce Canyon Airport, to avoid future conflicts with the north and northwest boundaries of the Bryce Canyon National Park.

The wording to be added to the Three Creeks Window description will also be added to the wording for this new Johns Valley Window. (Utah Power & Light Co. Line 2 is located within the new defined window area.)

Adjust the west and east boundaries of the Upper Valley portion of the window; the west boundary will be adjusted in the area of South Rim Peak to eliminate conflicts with the 2A management area prescription. The east boundary will be adjusted to reflect BLM planning concerns on adjacent BLM administered lands.

The wording to be added to the Three Creeks Window description will also be added to the wording for this new Upper Valley Window. (The Garkane Power Association Line 1 is located within the new defined window area.)

The Land and Resource Management Plan narratives and maps for the Three Creeks, Johns Valley, and Upper Valley Window areas will be revised according to the above direction.

The Main Canyon Widtsoe and Escalante-Davis Flat Junction-Antimony Window designations are based on analyses and evaluations of environmental concerns and issues, and the need to meet short- and long-term energy transportation needs for coal and carbon dioxide well field development. It is the Forest's understanding that these designations do not conflict with existing and proposed BLM planning direction for the areas in question. The designations will stand as described in the Draft Environmental Impact Statement.

This would be done,

20-30 snags refers to those in all stages of development; i.e. soft snags, hard snags, etc. 2-12 snags refers to only the hard snags. Hard snags in many cases will not be suitable for cavity excavation, at least until they have had a chance to decay. They will, however, be suitable raptor roosts and will make good future snags. We are doing everything we can to prevent snag" poaching".

We will leave 50 feet in aspen as well as in spruce-fir, ponderosa pine and Douglas fir.

Page IV-33, #5: See our previous general comments. A rewrite of the last part of this statement should be considered.

Pages IV-33 and 34, #6, A-D: The Standards and Guidelines should be rewritten to indicate that streams will be improved to 70% of optimum by 2030 or earlier. Refer to Binns and Eiserman, 1979, for additional guidelines for stream habitat management.

Page IV-35, #5A: The documents currently indicate that much of old-growth timber is associated with sites with slopes greater than 40%. Studies should be undertaken to determine whether old-growth timber needs to be better distributed than only on slopes greater than 40%. The Forest should either change its policy or demonstrate that the policy adequately addresses big game and migratory bird needs.

Page IV-37, #4: What are the goals for improving range in fair condition? These should be stated here.

Page IV-37, Range, #1: Opportunities exist to construct or modify stockponds to benefit shorebirds and waterfowl. Use of fencing, drop tubes, tanks, and nesting islands are some possible improvements.

Page IV-37, Timber, #1: Because of the poor economics of harvesting timber resources, maximizing wildlife resources should be a major factor in designing the sale.

Complete wildlife inventories suitable for site-specific analysis should be available at the sale planning stage and for establishing monitoring programs.

Page IV-41, Reforestation, #2: Consider the needs of MBHFI (e.g. canopy coverage) before shelterwood removal.

Page IV-41, Riparian: We strongly support your efforts for protection of riparian habitats. We are concerned that the maximum values are too high to maintain riparian areas in good condition. These should be reevaluated and probably lowered. A time frame and goal for identification, protection, and recovery of degraded riparian areas should be stated. We suggest that: riparian areas be inventoried; degraded areas identified; and protection or improvements instituted by 1990. Monitoring studies should be established and maintained to determine and monitor proper grazing levels.

Page IV-42, Water Uses Management: We strongly support the Forest in determination of the Forest's water rights.

Page IV-42, #3: The Forest is required to consult with FWS in certain situations as covered under the Fish and Wildlife Coordination Act.

Page IV-47, #4D: The meaning of this part is not quite clear. Forest land occupied by threatened or endangered species should not be disposed of under any circumstances. Mitigation of impacts to endangered species is not allowed under the Endangered Species Act.

Page IV-49 and 50: We support the Forest's closure of roads where seasonal or any road use may affect the welfare of wildlife populations.

To keep monitoring costs for Management Indicator Species as reasonable as possible, a limited number of species were selected. It is felt that because of occurrence in many habitats, large size, and of course the requirement for cavities. the flicker would serve as an indicator for all cavity nesters.

The Standard Guidelines listed under General Direction of the Forest LMP are minimum standards that will only apply to streams when more restrictive prescriptions are not used. Most fishery streams on the Forest have prescription 9A, Riparian Management, applied to them which requires that stream habitat conditions be maintained or improved at or above 50 percent of optimum. Only high valued fishery streams have prescription 9B, Intensive Riparian Management, applied which requires that stream habitat conditions be maintained or improved at or above 70 percent of optimum.

The varied topography of the Forest would indicate that steeper (40+) slope areas are distributed well enough (elevation, aspect, vegetation type, etc.) to provide for old growth dependent wildlife species.

An anticipated schedule of range condition class improvement is presented in Table IV-9 on page IV-22 (EIS).

These and other improvements will be incorporated into projects.

A) The Plan attempts to maximize "net public benefits" considering valued resources such as timber and wildlife and nonvalued resource criteria such as visuals and other qualitative considerations and local economic impacts. Management areas define the management practices that may take place on the land and their delineation is a result of weighing costs, benefits, and subjective factors that cannot be valued.

B) There is no substitute for site specific analysis. The Forest Plan is not the final evaluation of individual projects. Continued evaluation and monitoring of major actions such as timber sales will still occur on a scale necessary to reach an informed decision, and to meet legal requirements and plan objectives.

We will do this. We have some information on the requirements of the MBHFI. Any additional information you could provide would be appreciated.

Regarding the shelterwood and wildlife cover in the Planning analysis the proposed plan constrains approximately 25,000 acres of suitable coniferous Forest to either no harvest or a delayed overstory removal that allows regeneration to attain heights necessary for wildlife cover and to maintain visual quality. This is in addition to areas assigned a "no timber harvest" prescription because of economic considerations and to meet Minimum Management Requirements of the Forest Service Planning Regulations. Page IV-41 of the proposed Plan to which you refer provides standards and guidelines where other management prescriptions have not been assigned (General Forest Direction). Prescriptions that address wildlife and scenic emphasis in the Plan provide standards and guidelines for stocking levels, heights of trees, and percent of area in cover required for these purposes.

We are aware of the requirements and will do so.

Lands in this category would be our lowest priority for disposal. As the statement indicates, the only time lands in this category would be considered for disposal would be when resources to be required were even more valuable.

Page IV-74, Size: Does this include all areas supporting or capable of supporting fisheries? If not, these areas should be included. The EIS indicates the Forest has 3100 acres of lakes and 400 miles of streams that provide habitat for trout.	This prescription has been applied primarily to lakes with high value fisheries and to lakes that might be affected by management in adjacent prescription areas. Most of the perennial streams containing a fishery or a potential fishery are in Prescription 9A(or 9B).
Page IV-76, Wildlife: We strongly support the Standards and Guidelines to maintain or improve overall stream habitat condition at or above 70% of optimum.	
Page IV-77, Range Management: Please see our comments for Page IV-41, Riparian.	
Page IV-83: MIS species and MBHFI occur throughout the Forest. These should be emphasized wherever habitat affecting important life functions occur. This should be addressed here and/or in every other program narrative.	Habitat for healthy populations of MIS (and MBHFI) will be protected irrespective of the prescription emphasis.
Page IV-95, Wildlife/Fish Management, #3: Often, cavities are bored in aspen that are growing, but due to site or disease are in poor condition. This should be recognized as a beneficial element of the stand and not necessarily as a need for a sanitation cut.	The statement: "Maintain standing dead trees". Should not be construed to mean that we plan to cut all live trees. There are many instances of cavity nesters using live aspen.
Page IV-92, Transportation, #2: We strongly support this statement and suggest that Standards and Guidelines be developed to support it.	See Standard/Guideline added on page IV-50 (Plan).
Page IV-110: Are there any critical or otherwise important habitats for MIS species, MBHFI, sage grouse strutting grounds, etc.? If so, they should be noted and managed to benefit the affected wildlife even though they occur within an area where range is emphasized.	We have identified critical wildlife habitats on the forest according to maps provided by UDWR. All prescriptions, regardless of the emphasis, are multiple use prescriptions, and will provide for wildlife habitat needs. Areas of critical wildlife habitat will receive additional emphasis as necessary irrespective of the prescription applied to the area.
Page IV-115: Aspen should be maintained in the mixed conifer and ponderosa pine types where it exists to benefit cavity nesters. Standards and Guidelines need to be developed for wildlife within this management prescription.	An indirect benefit of timber harvest in the mixed conifer and ponderosa pine types is that it helps to maintain the aspen.
Page IV-136: Does this include all riparian areas not covered by 9B? If not, they should be included. The document indicates 1% of the Forest or about 18,000 acres should be included under 9A and 9B.	
Page IV-139, Range Management: See comments for Page IV-41, Riparian. If trout fisheries are involved, we recommend Standards and Guidelines shown on Page IV-148, DO7.	
Page IV-145: The EIS indicates that approximately 400 miles of streams support trout. This converts to approximately 10,000 acres. Based on your "desired future condition", should more or all of this area be in this management category? How is acreage in each category related? See comments on Page IV-136.	
Page IV-148, Range, #1A: We strongly support these recommendations.	
Chapter 5, Monitoring: The monitoring plan is an essential part of management. Monitoring for fish and wildlife and riparian habitat should be a high priority for adequate funding. We are concerned that monitoring will be one of the first activities cut if budget shortfalls occur. These areas are already underrepresented in budgets and staff.	In the past, budget support from higher levels for inventory and monitoring type activities has been poor. We hope that with completion and implementation of Forest Plans this will change and more support will be given this much needed activity.

Literature Cited

Binns, N. A., and F. M. Eiserman. 1979. Quantification of fluvial trout habitat in Wyoming. Trans. Am. Fish Soc. 108(3):215-228.

RESPONSE TO LETTER 041

RICHARD H. BRYAN, *Governor*
JACK LEHMAN, *Chairman*
ROBERT W. BUGBEE, *Vice Chairman*
JACK L. STONEHOCKER, *Director*

STATE OF NEVADA

FRANK H. SCOTT, *Member*
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ROBERT WEISE, *Member*

COLORADO RIVER COMMISSION
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January 8, 1986

Mr. John V. Lupis
Forest Supervisor
U. S. Department of Agriculture
Post Office Box 580
Cedar City, UT 84720

Dear Lupis:

We have reviewed the Summary of the Draft Environmental Impact Statement (EIS) and proposed Forest Land and Resource Management Plan for the Dixie National Forest and offer the following comment relating to water yield on forest land.

The State of Nevada, in conjunction with the other Colorado River Basin states, strongly supports management of forests to increase water yield. It is our hope that increased water production from forest land in the Colorado River Basin will postpone future water shortages that will inevitably occur within the Colorado River Basin due to increasing demands.

We understand that the Dixie National Forest has limited opportunities to manipulate water yield. However, given the importance of meeting future water demands in the Colorado River Basin, we strongly encourage the use of any management methods which could possibly increase water production where opportunities for use exist.

Sincerely,

Jack L. Stonehocker

Jack L. Stonehocker
Director

Water yield augmentation opportunities will be considered in the planning for all future timber sales.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
ONE DENVER PLACE — 999 18TH STREET — SUITE 1300
DENVER, COLORADO 80202-2413

Ref: 8PM-EA

JAN 17 1986

Al Schuldt, Forest Planner
Dixie National Forest
82 North 100 East
P.O. Box 580
Cedar City, Utah 84720

Dear Mr. Schuldt:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. The Region VIII office of the Environmental Protection Agency (EPA) has reviewed the Dixie National Forest Proposed Land and Resource Management Plan (LRMP) and Draft Environmental Impact Statement (DEIS). Our comments are offered for your consideration in preparation of the final Environmental Impact Statement and Forest Plan.

Of primary importance to the many uses of the Forest are those management programs related to water quantity/quality, watershed management, grazing, and recreation. In general we find the DEIS adequately discloses environmental consequences of Forest actions related to the various management programs. Additionally, the LRMP sets forth management discriptions and implementation schedules which address the protection of environmental values associated with these management programs. We have identified some concerns and recommendations regarding resource management. For example, we believe it is necessary to incorporate the EPA and State of Utah antidegredation requirements that apply to all surface waters in the Dixie National Forest. We also recommend the LRMP discuss Forest activities directed at erosion and sediment control related to the Panguitch Lake Restoration Plan. We are aware of and applaude the Forests extensive involvement with the State of Utah, local government and private interests in improving the forest resources and value to the public.

Based on our concerns and the criteria EPA has established to rate adequacy of draft EIS's, we rate this DEIS as Category EC-2 (environmental concerns-insufficient information). If you have any questions please contact Mike Hammer of my staff at FTS 564-1716.

Sincerely,

Dale Vodehnal

Dale Vodehnal, Chief
Environmental Assessmant Branch

Enclosure

cc: J. S. Tixier, Regional Forester
William Dickerson, A-104 (OFA)
Kerry Clough, ARA 8PM

EPA COMMENTS ON THE DIXIE NATIONAL FOREST

PROPOSED AND AND RESOURCE MANAGEMENT PLAN AND DRAFT EIS

Water Quality, Watershed Treatment and Aquatic Life

The DEIS emphasizes the importance of water quantity and water quality and the significance of the Dixie National Forest contribution to the area water supply. In general the DEIS discloses the water quality impacts as being related primarily to high sediment concentrations due to streams flowing through areas with highly erosive soils and outcrops of sedimentary rock strata. Primary Forest management activities such as timber sales, road construction, and grazing, especially in riparian areas, could increase sediment yields.

We note that the Forest is involved in a number of cooperative programs with the State of Utah and local governments (DEIS III-33, III-34 and elsewhere) to maintain, meet or improve water quality on and adjacent to the Forest. EPA recommends that the Plan and EIS present a discussion of compliance activities with existing antidegradation requirements (refer to EPA's antidegradation policy at 40 CFR Part 131.12 and to the State of Utah antidegradation policy) applicable to streams in the Dixie National Forest. There should be clarification in the EIS of what these requirements mean in terms of impairment to existing quality/designated uses and in terms of specific management activities.

We support the preferred alternatives goal of agressive action in treating the watershead restoration backlog. The Plan watershed improvements implementation schedule is consistant with those watershed improvements projects identified in the 1984 State of Utah Water Quality Report 305(b) priority stream segment list. We are also pleased to see the inclusion of watershed improvements effectiveness and maintenance needs in the Plan Monitoring and Evaluation Program.

The DEIS discusses the accelerated eutrophication and degraded aquatic habitat condition in lakes and reservoirs on the Forest. We are aware of the Forest's participation on the Panguitch Lake Advisory Committee and its assistance in the development restoration techniques to support the Panguitch Lake Restoration Plan. We would like to see the Forest Plan discuss the Restoration Plan in relation to management activities. Measures directed at erosion and sediment control, particularly in relation to timber sales and grazing management in the Panguitch Lake watershed need to be defined.

The Forest Plan and DEIS have been modified according to your recommendations on clarifying the Forest's role in meeting State water quality standards.

Grazing in the units adjacent to Panguitch Lake is limited to a two week period after September 31, 1986. Timber sale preparation and administration activities in the Panguitch Lake drainage will emphasize erosion prevention and control. These measures will be developed on a case by case basis.

Riparian Areas and Wetlands

Due to high spring runoff and heavy summer rainfall the DEIS discusses the need for well vegetated riparian areas and stream channel stability. The preferred alternative calls for extensive riparian management activity along all perennial streams, lakes and wetlands. Certain riparian areas are designated for intensive riparian management. Are these intensive management areas the result of past livestock management practices? Can the preferred alternative proposed grazing level be maintained and not conflict with the Plan Management Direction on page IV-148?

Range Management

The Plan describes 62% of the Forest acres suitable for grazing as in fair (46%) to poor (16%) condition. The stated Forest management goal is to keep the range resource in an upward trend where it is less than good condition, and in a static trend where it is in good condition (DEIS III-23). Are there sufficient good condition acres on the Forest to allow rotation annually of a portion of the fair to poor condition acres out of production to aid in range rehabilitation? What are the annual goals of upgrading range class condition?

Serious errors were detected in the mapping of riparian management areas (Prescriptions 9A and 9B) in the draft Land and Resource Management Plan. These errors have been corrected in the final LRMP.

Based upon the comments received on the draft LRMP, Forest Management has re-evaluated the riparian area management prescriptions, particularly as they regard riparian area condition and grazing management. The lack of information currently available on the condition of riparian areas across the Forest is an impediment to the effective management of these important resources. To rectify this situation, an accelerated multi-disciplinary riparian area condition inventory is proposed for implementation within the first 5 years of the planning period. Information on impacted riparian areas acquired in this effort will be used to develop riparian area management plans addressing specific measures needed to improve a degraded area. This approach recognizes that there are different factors contributing to the condition of any particular degraded area. These problems require careful site specific evaluation to develop effective measures to induce recovery.

Grazing management policies in riparian areas geared primarily to Forest-wide forage utilization levels restrict the land manager in implementing innovative livestock management techniques which may provide more effective means to maintain streambank stability, riparian vegetation and other factors commonly impacted by livestock. Nor do they recognize the differences in productivity, stability, vegetative structure and response to grazing that occur among the riparian ecosystems found on the Forest. A more site specific management policy is proposed for livestock grazing in riparian areas.

Forest Service policy recognizes that riparian areas are "among the most productive, sensitive, diverse and often most geographically limited ecosystems within National Forest lands". These areas are capable of supplying a wide range of high quality resources if properly managed. Where resource management activities result in tradeoffs, a careful evaluation is required to produce a proper mix of resource outputs. We recognize that because of the tradeoffs necessary in multiple use management of riparian areas, some resources will not be produced at their maximum potential. However, we do believe that the resource output goals of this plan maximize the net public benefit derived from riparian areas. At the same time, it provides for the maintenance of healthy riparian ecosystems, protects water quality and water delivery related values, and allows for the recovery of currently degraded areas.

The logistics of resting poor and fair condition ranges would be difficult. A great deal of fencing and/or herding would be required. Table IV-9, page IV-22 describes the goals for condition class improvement by decade. We have not broken it out by year.

COLLEGE OF NATURAL RESOURCES
Utah State University
Logan, Utah 84322-5230

DEPARTMENT OF
RANGE SCIENCE
801-750-2471

January 19, 1986

Mr. John Lupis
Forest Supervisor
Dixie National Forest
82 N. 100 E.
Cedar City, Utah 84720

Dear Mr. Lupis:

The draft Forest Plan proposes the candidacy of three new Research Natural Areas on the Forest. These are the Timbered Cinder Cone, Table Cliff, and a small, intermittent drainage in the Red Canyon area. I would like to commend the Dixie National Forest staff for including these fine areas in the Plan, and I would like to express my emphatic personal support for their candidacy. I am familiar with all three areas, and performed the first reported reconnaissance of the Timbered Cinder Cone after Mr. Bernard Vinograde of Brian Head brought the place to the attention of the Forest Service.

In addition to their integrity, distinctness, and great beauty, the three areas have exceptional biological and ecological interest. It is easy to think of research projects that could be conducted within each. As an example, I recently wrote a research prospectus on possible hypotheses to be tested within a naturally isolated coniferous forest stand such as the Timbered Cinder Cone. The educational values of the three natural areas are also very great, given the rapid population growth of southwestern Utah and the proximity of Southern Utah State College.

Fortunately, designation of these three tracts as Research Natural Areas would have negligible impacts upon Forest outputs and use patterns. They demonstrate the tremendous natural diversity of the Dixie and may serve as baselines for management activity and as sources of information about the past (the bristlecone pines on Table Cliff, for example).

Thank you for including the areas, and for your consideration.

Sincerely,
Nicholas Van Pelt
Nicholas Van Pelt
Ph. D. student

Kaibab
DEDICATED TO
EXCELLENCE

Janaury 20, 1986

Mr. John V. Lupis
Forest Supervisor
Dixie National Forest
82 North 100 East Street
Cedar City, UT 84720

Re: Kaibab Industries' Response and Input to the Draft Environmental Proposed Forest Land and Resource Management Plan for the Dixie National Forest

Dear John:

We appreciate the opportunity to provide our comments to the Draft Plan for the Dixie National Forest. Several of us representing Kaibab Industries have been intently involved with the forest planning process, beginning with the formulation of issues and concerns for the Dixie. Because of our early involvement and gradual understanding of the elements in your Forest Plan, we were prepared for the resource management levels as developed for Alternative B-Composite as the proposed action or "preferred alternative" we have been accustomed to referring.

Your staff is to be commended for the hard work, long hours, innovative ideas and compromise that were required to frame the major elements for this Plan.

As a matter of record, Kaibab Industries operates a fair-sized softwood lumber operation in Garfield County (Panguitch, Utah) with logging, sawmilling, drying and surfacing facilities. Our operation is a vital and integral part of Southern Utah's social and economic structure. Our employment level is currently 94 people at the Panguitch mill, with an additional 24 seasonal people involved with harvesting and road building activities on the Forest. The products manufactured here and marketed nationally are dimension and common lumber. Structural timbers are sold locally to Utah mines and nationally to wood preservative companies.

Corporate Headquarters
4602 E. Thomas Road
P.O. Box 20506
Phoenix, Arizona 85036

602/840-6565

We view ourselves currently and for the long-term as responsible and progressive convertors of public timber to forest products and services. Our well-being is dependent upon an adequate amount of raw material (timber) from the Dixie National Forest. Our desire is to maintain a single shift, year-round operation at Panguitch, Utah.

In years past and under previous Forest Plan levels, we have harvested and manufactured logs on a two-shift basis year-round at a level of 31 million board feet log scale. We recognize and understand that while the biological capabilities of the land are improving that the size, location, and character of trees on the Forest is changing and that current lumber and fiber markets constrain us to the level featured in Alternative B (22.9 million board feet of softwood sawtimber per year). This volume of 22.9 million board feet per year, with exception of some minor amounts of timber from the Fishlake National Forest, must supply all the requirements of Escalante sawmills and several small business mills on the Forest. This leaves our Panguitch operation and Kaibab Industries with the additional task of bringing to Panguitch, from the North Kaibab on the Kaibab National Forest in Region 3, an additional volume of 6-8 million board feet of sawtimber in support of Dixie National Forest raw material levels.

Any major downward change in our economy and lumber market levels would prohibit the North Kaibab transfer volume, thereby jeopardizing our Panguitch operations. The balance between current harvest levels on the Dixie and transfer levels must be maintained and we feel that Alternative B is headed, and correctly so, in this direction.

Comments to the Draft Environmental Impact Statement:

1. The Draft Environmental Impact Statement shows the results of comparying and analyzing each of the Alternatives. We find that the use of certain economic evaluation criteria is inconsistent and difficult to understand. The Tables with Benchmark and alternative comparisons use actual dollars outputs that are directly verifiable and measurable for commodity outputs, but use assumed estimates for the values of wildlife and recreation. We recognize and appreciate the value of these non-commodity uses and that they are impossible or difficult to assign dollar cost and benefits to. Our argument is for all National Forest benefits and cost comparisons to be based on the same comparison criteria and not on a mixture of dissimilar economic factors.

We recommend that economic criteria be either:

1. actual dollars in cost or benefit spent or realized; or
2. similar factors of expansion for shadow cost benefit to each and every national forest resource value.

It is not valid to compare the arguments of actual dollars for timber or range to imaginary dollars for recreational visitor days, esthetics or wildlife.

Please consider the following data display taken from Table II of the DEIS thousands of dollars adjusted to January 1, 1982:

The Forest is required to display economic information and to use RPA (Resource Planning Act) values as presented in the Draft Environmental Impact Statement. The "cash flow analysis" displayed in the document shows fairly clearly that all wildlife benefits are non-cash and that wildlife makes no contribution to receipts. Also, clearly displayed is the fact that timber is the highest cash contributor. References are made in the document to the limitations of using economic comparisons between resources. Comparisons and decision making on the Forest are not made solely on the basis of present net value. Subjective criteria are considered in reaching planning decisions which are supposed to maximize stability and the multiplier effect of changes in Forest outputs and their influence on various economic sectors including contributions from recreationists as well as industries dependant on the Forest's raw materials (forage and recreation). The analysis prepared by the Forest does present and account for the multiplier effect in terms of income, employment, and population growth for changes in the levels of timber, recreation, and grazing outputs between alternatives. These economic factors serve as measures of local community stability and are used in the decision making process.

Cash Flows and Non Cash Flows	Benchmark Maximum Timber	Alternative "B" Composite	Benchmark Max DNV MUT Values	Alternative "C" Constrained Budgets
TIMBER:				
Costs	2,106	2,739	363	1,370
Benefits	1,582	1,211	369	1,151
Net Benefits	- 524	- 1,528	6	- 219
Receipts	1,569	1,198	359	1,138
Non-Cash Benefits	13	13	10	13
WILDLIFE:				
Costs	144	375	67	52
Benefits	5,631	5,665	4,840	5,631
Net Benefits	5,487	5,290	4,773	5,579
Receipts	-0-	-0-	-0-	-0-
Non-Cash Benefits	5,631	5,665	4,840	5,631
TOTAL FOREST:				
Costs	6,817	7,855	3,033	4,781
Benefits	20,873	20,680	17,210	18,699
Non Benefits	14,056	12,825	14,177	14,418
Receipts	1,924	1,532	680	1,391
Non-Cash Benefits	18,949	19,148	16,530	17,308

As indicated above, these comparisons are rather interesting; it's clear that timber produces the highest cash receipts, $1000,000 plus, which is critical to local, county and school contributions. Wildlife, with zero dollar receipt levels, represents benefit levels of $4,840,000 plus, which cannot contribute to counties and schools. The above comparison also shows that wildlife is not affected a great deal by any of the above alternatives.

In summary, we would recommend that DEIS reflect and recognize the full magnitude of the multiplan effect that each million board feet has locally and nationally accounted for by income generated by employment, the production of goods, services and resale of these goods derived from timber for our economy.

II. Long-term community stability is an important and serious concern to our people who live and work in Garfield County. It's noteworthy that Alternative B indicates very little improvement over the next five decades.

III. In our view, after analyzing forest inventory and running regression analysis on the basaltic sites on the Dixie, that the maximum benchmark level for timber, 31 million board feet, is conservative and possibly understated. We understand that there may be problems with the inventory and subsequent typing and mapping programs, however, Table III, Page 27, indicates that 87% of the commercial forest land on the Dixie can produce from 50 to 165 cubic feet of wood per acre, per year. Sawtimber conversion in board feet would be between 225 and 825 board feet per acre, per year and when

There is an undoubted need for better inventory data on the timber resource of the Forest. It is questionable that this would bring about a change in estimates for the first decade which are based on site specific information. Additionally, under the proposed Plan the Forest is striving for fairly high levels of timber stand improvement that should greatly benefit future timber supplies. The increased certainty about the future will aid both the Forest Service and timber industry in long range planning.

applied to 220,000 preferred timber analysis acres, computes to a yield of approximately 49.5 million board feet per year. These figures indicate that the Dixie National Forest lands are capable of producing in excess of 26.4 million board feet per year. We hope that the 22.9 million board feet of economic softwood sawtimber level, as displayed in the proposed Action Plan, proves adequate over the long-term so that management improvements can tap the full Dixie National Forest's biological potential.	
The DEIS describes the insects and disease affecting the Dixie National Forest on Page III-53 and recognizes the need to rapidly convert the old overmature stands to managed stands and thus prevent the losses now occuring throughout the forest. It addresses the completion of the salvage harvest on the east side of the forest due to the mountain pine beetle but does not reference the need to accelerating the harvest in other high risk stands on the Dixie National Forest. Salvage is after-the-fact and has little benefit or value. The forest property contains a preponderance of old over mature material despite the initial entries which only removed 25 to 40 percent of the stand. These stands must be re-entered to bring them to a managed condition and reduce the tremendous mortality of 142 million board feet per year which pervades the forest. This preponderance of mature and over mature age classes invites more insect and disease activity, risk of wild fires and and the loss of some wildlife species dependent on early successional stages for their habitat.	You point out on page III-53 of the DEIS that salvage is mentioned in connection with mountain pure beetle and seem to imply the Forest views it as a viable method of handling insect outbreaks. Chapter 3 "Affected Environment" simply states what has gone on in the past and what will continue to happen in unmanaged stands. The Forest is in complete agreement that timber management where feasible is a much preferred method of dealing with Forest pests. This coupled with burning or other activities where harvest is not a viable option is far superior to "after-the-fact salvage." Goal No. 24 in the proposed plan emphasizes the need for harvesting productive sawtimber stands that are highly susceptible to attack by mountain pine beetle and other Forest pests. Standards and guidelines in general direction also stress the integrated pest management approach consistent with resource management objectives.
It is true that current markets are not condocive to manufacturing mixed conifer dimension material, but if a steady supply of over mature material could be depended upon with the second and third decades, then capital investments could be made to capture markets now unavailable, such as chip and wafer board. This would be a dual benefit to both the local communites and the enhancement of the Dixie National Forest.	The stand exams we are currently completing will give site specific information.
We feel the use of average yields calculated from an inventory that is not site specific to the analysis areas has materially distorted the potential productivity of the Dixie National Forest. Areas such as Mt. Dutton and some of the plantations on the Escalante District demonstrate that the knowledge and skills are available to successfully regenerate the timber sites on the Dixie to realize its true productive capacity.	
IV. Recommendations To The Final Environmental Impact Statement:	
1. Calculate a departure from non-declining yield and modify the Composite Alternative, maintaining the outputs and costs for the first decade as displayed in the Plan, but in decades 2 and 3, increase timber outputs to the level shown in the RPA, Alternative G (34.8 and 32.1 MMBF respectively) adjusting budgets accordingly or obtaining increased budgets for the increased outputs. Outputs for decades 4 and 5 would necessarily drop some but utilize the increased yield due to accerlerated growth and response to release. This approach will reduce the anticipated yield reductions and possibly eliminate completely. We can only foresee the poor response will continue under the flat harvesting curve of 22.9 MMBF softwood displayed for the proposed action with mortality taking up to 40% of growth. In reality, growth is being held down due to light harvests, mortality and the continuing maintenance of trees over culmination of mean annual increment.	This Plan is for 10 to 15 years and we will collect site specific information for the next Plan,
2. Consider a reduced demand curve for dispersed recreation, particularly as it affects costs and budget demands. People will continue to enjoy developed recreation sites with modest expenditures for trails and other facilities.	The recreation demand projections we used are most likely on the conservative side.

3. Schedule a new inventory which is compatable with forest planning within the next five years. This inventory should be responsive to specie type rather than broad averages. Re-calculate the predictive capabilities of the timbers prognosis model.

The Forest seeks to incorporate stand information (stand examination data) in combination with, or in lieu of, inventory data. The Dixie is currently engaged in an accelerated stand exam program. Growth models will be recalibrated to be more site specific and to include managed stand data where possible.

4. We recommend that the current management direction, as expressed for the current management period, 1975-1985, be maintained for this next planning period with the following considerations:

- — Obtain optimum use of the timber resources —
- — Offer for sale the full potential yield of the standard and special components —
- — Assure timber harvest is compatible with all other resource values —
- — Re-forest non-stocked areas and increase stocking or understocked areas —
- — Improve the quality and/or growth rate of immature timber stands through timber stand improvement work —

The Forest seeks optimum use of the timber resource as viewed by Kaibab where compatible with other Forest goals and objectives.

The Forest supports similar resolution of these issues as stated in the proposed plan. (Issues #2, 3, 5, 6, 7, 10, 11, 12, 13, 14.)

Comments To The Proposed Land And Resource Management Plan;

1. Kaibab Industries supports the following identified issues, concerns, and opportunites — with corresponding issue statements:

Issue #2
Increased demand for recreation, mineral and wildlife. No increase for timber, range, and water yield.

Issue #3
Continued stability for dependent communities.

Issue #5
Increased emphasis on wildlife management.

Issue #6
Firewood will continue to be available.

Issue #7
Continued maintenance of 115,000 acres.

Issue #10
Increased emphasis on scenic values.

Issue #11
Locate developed recreation sites to enhance public requirements.

Issue #12
Locate developed recreation sites to enhance public requirements.

Issue #13
Sufficient areas exist to separate cross-country skiing and snow-mobiling.

Issue #14
Maintain and reconstruct safe transportation systems in a cost efficient manner.

We have concerns regarding the issue statements of the following statements:

Issue #1 Prompt clean-up of logging slash is responsible for previously harvested areas not regenerating promptly to need stocking levels because of the microsite requirements for shade tolerant softwood species.	The Forest agrees that logging slash clean-up should be only that necessary to meet resource requirements and that it should be left to provide desirable microsites for seedling establishment where appropriate.
Issue #4 Overmature and susceptible timber stands should be accelerated early in the period and not strung out or even-flowed.	The Forest feels we are already in a departure for softwood sawtimber. Softwood harvest levels are constrained only by economics and multiple use resource considerations. The even-flow constraint has a fairly small impact..

II. Management Direction -- We agree with and support the following goals which we feel are clearly needed:

#1
Provide a broad range of outdoor recreation opportunities for all segments of the public.

#2
Private enterprise to supply high capital investment recreation opportunities.

#5
Provide an adequate trail system to disperse recreation users.

#8
Provide for a pleasing visual landscape.

#9
Protect cultural resources.

#10
Preserve natural ecosystem in research natural areas.

#12
Manage designated wilderness areas.

#13,14,15,16,17
Maintain, manage, protect wildlife habitats.

#18
Improve range allotments and managements.

#21
Livestock and wildlife -- critical winter range.

#24,25,26,27,28
Manage harvesting, silvicultural, utilization and roads programs.

#29,30,31,32,33
Manage soil and water.

#44
Develop a cost effective and adequate transportation system.

#50,51,52,53,54,55
Manage public information, visitor information, environmental education service to the public,

III. Standards and Guidelines -- The following guidelines and standards are of direct concern to us and we recommend the following in the forestwide standards and guidelines:

DIVERSITY:

20-30 snags per 10 acres with 2-12 hard snags per 10 acres will greatly reduce timber growth potential. We recommend total snag levels that average 10-15 per 10 acres including hard snags. The present inventory of snags is increasing and adequate.

WILDLIFE HABITAT IMPROVEMENT & MAINTENANCE:

Change general direction statement #1 to read "use appropriate silvicultural practices to accomplish wildlife habitat objectives forestwide".

Change #5 to read, "Plan wildlife habitat and vegetation cover needs on a drainage by drainage basis".

IV. MONITORING AND EVALUATION PROGRAM:

The following are comments on the monitoring and evaluation criteria:

Habitat Diversity--

How will significant variation from Standards and Guidelines specification be handled, what's significant?

Snag Management--

10% below will be hard to evaluate since there are issues about snag requirements during the next five decades allow for a 50% variance to the Standards and Guidelines.

Timber Sale Action Program and Harvest Schedule --

Change the word volume to acres as contained in the Section Variations to read, "timber sales are not progressing as scheduled or annual acres is not ..... roundwood products".

Timber Cost Projections --

Remove this section all together since it doesn't apply to the full text of providing silvicultural and community stability objectives contained in the proposed plan.

The 2-12 hard snags is part of the 20-30 snags in all (hard & soft) stages of snag "life". Our concern, and the concern of a number of commenters is that, in some areas at least, the snag inventory is inadequate. Forest-wide, with improved timber management, access, and increased firewood demand we are concerned about snag numbers in the long term.

Statement #1 under general direction standards and guidelines, "wildlife habitat improvement and maintenance" will be reworded to include use of silvicultural practices "forest-wide" rather than limiting them to timber sales.

Wildlife needs are generally viewed on a "drainage" basis, but sometimes smaller areas need to be considered.

We must quantify what is significant where possible. Some subjectivity will be required where a quantification cannot be made of deviations from standards and guidelines.

We have purposely set a wide range (20-30 snags/10 ac. = 2-3/ac.) to allow ourselves (and timber operators and firewood harvesters) some latitude. The usual practice would be to identify a definite problem if we are 10% below the lower limit. In certain areas where an especially sensitive species; western or mountain bluebirds, for example is known to nest, we might need to consider a drop to 10% below the upper limit as a problem.

Timber monitoring will be based on harvested acres, not volume.

The monitoring section dealing with timber cost projections will be deleted.

In closing, and to reiterate earlier comments made verbally to your staff, we feel that this draft and proposal have addressed the major concerns that effect our company, employees and the communities that we are closely associated with. We appreciate the opportunity to comment and state our position as a part of this process.

Sincerely,

KAIBAB INDUSTRIES

James L. Matson,
Vice President
Timber Resources

JLM:n

cc: Stan Tixier, Regional Forester
Honorable James V. Hansen

NORMAN H. BANGERTER
GOVERNOR

STATE OF UTAH
OFFICE OF THE GOVERNOR
SALT LAKE CITY
84114

February 3, 1986

Mr. John V. Lupis
Forest Supervisor
Dixie National Forest
82 North 100 East
P.O. Box 580
Cedar City, Utah 84720

Dear Mr. Lupis:

The State of Utah, through the Resource Development Coordinating Committee, has completed its review of the Draft Environmental Impact Statement and Proposed Forest Land and Resource Management Plan for the Dixie National Forest. The State appreciates the Forest's efforts to involve the State in this important process.

Other than the specific comments attached, there are two areas in particular that deserve special mention. The first is that of the forest budget. The preferred alternative is based on a significantly increased budget. Given the current economic climate, the possibility exists that the Forest will not receive the proposed funding. It therefore seems likely that there will be modifications to the Plan due to budget constraints. The State would appreciate notification of any Plan changes based on budget constraints. Second, while riparian management is often highlighted, there is concern that actual planned efforts may fall short of those needed to adequately protect and rehabilitate this most important of resources.

The State will be informed of any changes made in the Plan.

Based upon the comments received on the draft LRMP, Forest Management has re-evaluated the riparian area management prescriptions, particularly as they regard riparian area condition and grazing management. The lack of information currently available on the condition of riparian areas across the Forest is an impediment to the effective management of these important resources. To rectify this situation, an accelerated multi-disciplinary riparian area condition inventory is proposed for implementation within the first five years of the planning period. Information on impacted riparian areas acquired in this effort will be used to develop riparian area management plans addressing specific measures needed to improve a degraded area. This approach recognizes that there are different factors contributing to the condition of any particular degraded area. These problems require careful site specific evaluation to develop effective measures to induce recovery.

I hope that the State's comments will be useful in clarifying and strengthening the Plan that is an important planning tool for both the State and the Forest. The more we work together to understand the resource base of the State of Utah the closer we come to making wise decision as to use and sustenance of those natural values. The information contained in the Plan brings us all one step closer to better management. Your efforts are acknowledged and appreciated.

Sincerely,

Norman H. Bangerter
Governor

NHB/ras
Attachment

COMMENTS OF THE STATE OF UTAH ON THE

PROPOSED DIXIE LAND AND RESOURCE MANAGEMENT PLAN AND DEIS

I. PROPOSED LAND AND RESOURCE MANAGEMENT PLAN

A. Section I Comment

Page I-3, Location of the Forest: A map delineating the ranger district boundaries would be a helpful addition.

B. Section II Comments

Page II-4, Final Paragraph: The decline of human resource programs is mentioned throughout the document, with several alternatives to various degrees relying on output from the programs. Is the Forest making any attempts to sustain or promote these programs?	The Dixie uses many of the Human Resource Programs to accomplish their objectives in recreation, range, wildlife, and timber. We try to keep informed of all the programs that are available and use them when it is possible. We certainly rely on them heavily and plan to continue them as much as possible.
Page II-9, Paragraph 4: Opportunities for reducing conflicts between user groups are listed, but there is no suggestion of separation. This might be accomplished by zoning for time or space. Is this option considered?	We have not considered the use of zoning of time or space to prevent overcrowding at the present time. We feel the problem can be handled by the methods considered at the present time.
Page II-9, Paragraph 5: If this statement is correct, that "heavily used dispersed campsites that continue to receive heavy use from hunters and fishermen will continue to deteriorate", does that imply that the standards and guidelines provided for in the Plan are inadequate to address this need.	What this statement means is that without the standards and guidelines there will continue to be problems with resource deterioration. Chapter II and Alternative A is describing the current program and what is happening now.
Page II-15, Paragraph 9: The 2,900 figure should be construed as a goal and not as a final objective. As the Herd Unit Management Plans are developed this number may change.	We realize this, and will be much more comfortable with the population goals derived from the Herd Unit Plans now being developed, we are with the somewhat arbitrary 2,900 figure.
Page II-20, Table II-15: The State of Utah has no official list of threatened and sensitive plant species	We are aware of this. The title of the list has been changed to reflect its origin.
Page II-36, Water Quality: The State of Utah has designated as anti-degradation segments "those parts of all the streams that are within the outer boundary of the Dixie National Forest." Anti-degradation segments which have been classified by the State as 1C, 3A, and 4 are protected for domestic raw water sources; as a habitat for cold water game fish, and other cold water aquatic life; and for agricultural uses. New point source discharges have been prohibited on these segments since 1978.	The Forest intends to comply with all State water quality standards in its land and resource management activities.

Projects such as construction of dams or roads in anti-degradation segments, where pollution will result during construction activity will be considered by the State's Water Pollution Control Committee on a case-by-case basis. For 3A stream segments a turbidity increase of 10 NTU's is allowed. If background levels exceed 100 NTU's, a 10% increase is permitted. Short term variances may be considered by the Committee on a case-by-case basis for short phases of projects when instream disturbances are unavoidable. Detailed erosion control plans should be submitted to the Committee for review if such variances are requested.

The Forest is encouraged to monitor the quality of its streams, springs, lakes, point source, and non-point sources of pollution and to input such water quality data into the STORET system. This will add to the State's data base and will provide interested agencies and individuals easy access to the Forest's data.

Page II-38, Paragraph 1: While the Forest has the discretion to issue permits for hydropower facilities on the Forest, it is the responsibility of the State Engineer to approve water appropriations and diversions.

Page II-46, Research Natural Areas: The State wants to emphasize its support of the research natural area concept and the proposed candidate sites. As more and more resource users compete for the same resource, it is essential to preserve those few remaining areas that represent undisturbed native communities or that provide habitat for rare plants and animals. The State is interested in becoming more involved in the RNA process--in the further study of the proposed candidate sites and any future proposals.

C. Section III Comment

Page III-3, Issue 13: "What should be done to separate the recreational activities of conflicting user groups such as cross-country skiers and snowmobiles"? The response to this issue does not fully address the problem. Are areas provided that actually separate these conflicting user groups? That is, are there areas in which snowmobilers are excluded from cross-country ski trails and vice versa?

D. Section IV Comments

Page IV-3, Goal No. 6: "Provide a system of managed cross-country ski and snowmobile trails with adequate trailhead facilities." Once again, are these separate? Will there be groomed trails provided for cross-country skiers? Are there groomed cross-country ski trails on the Forest now? If so, how many are there and where are they located?

Page IV-4, Goal No. 9: The State supports the Forest's cultural resource protection goal and objectives to set up a schedule for site nomination to the National Register of Historic Places under a target system.

Page IV-8, Soil and Water, Objective b: While the Utah State Water

The Forest has a water quality monitoring plan which is updated annually. This plan is implemented to the extent that funding is available. All water quality data (except short term project monitoring) is input to the STORET data base.

The Forest closely coordinates all hydropower applications with the State Engineer's office. We recognize the State Engineer's responsibility to approve these and other types of diversions.

In the next couple of years the RNA's will be designated. The Forest will involve the State in the process.

No trails have been designated at the present time for exclusive use by either snowmobiles or cross country skiers. We felt that by providing sufficient areas for all types of use that there would be adequate opportunities for separation without enforcement. The Forest does not have man power or funding available to provide a highly sophisticated law enforcement program.

The Forest has not provided groomed cross-country ski trails; however, the state has groomed trails that they maintain on the Harkagunt Plateau, also a private party located at Brian Head has provided groomed trails for cross country skiers in the Brian Head area.

Pollution Control Committee has not developed or adopted a set of "Best Management Practices", it does insist that soil and water conservation measures must be used whenever necessary to prevent violation of the State's water quality standards and to maintain downstream beneficial uses.

Page IV-12, Objective a: The State would like to be included in the Forest's plans to develop a road management program in 1988.

Page IV-20, Paragraph 2: Again, the Forest plans to provide "areas for snowmobile and cross-country ski trails", but will these be separate?

Page IV-30, General Direction 4: As people tend to prefer riparian areas due to high associated aesthetic values, the potential for degradation is great unless measures are taken to prevent or mitigate impacts. General Direction 4, and other measures like it, are supported and should be given high priority as pro-active efforts to avoid the problem.

Page IV-37, General Direction #5: This general direction is supported in that salt should not be placed near water sources. Where salt is placed near water, cattle seem to create even greater impacts to the soil and vegetation.

Page IV-41, Riparian Area Management: The Plan notes on page II-38 that "condition of some riparian areas is currently below potential due primarily to overuse by permitted livestock. This situation represents some degree of difficulty to rectify..." The State appreciates the problem; but, at the same time believes that riparian areas are rare, important and deserving of special attention. While the Standards and Guidelines offer significant protection, in the area of livestock grazing where the majority of problems seem to lie, some additional constraint are appropriate. Two additions are recommended. First, deteriorated riparian areas should be protected from overgrazing by exclusion from the areas, by herding, by changing the class of livestock or by a combination of these methods; second, livestock should be kept away from streambanks during wet seasons in order to prevent the deterioration of the banks.

Page IV-49, Transportation System Management: The State supports and encourages use of the unacceptable impacts to wildlife or habitat criteria to evaluate road closure or limitation.

Page IV-95, Wildlife and Fish Resource Management No. 3: The State fully supports and encourages maintenance of snags for cavity nesting birds.

Page IV-110, Livestock Grazing: It is surprising to see no management guidelines for riparian areas in this management area. Are all riparian areas, even within management area 6A, covered by management areas 9A and 9B? If not the issue should be addressed in this section.

Page IV-145, Intensive Riparian Management: The only intensive riparian management proposed will occur in the Teasdale District. Certainly there are

The Forest routinely employs soil and water conservation measures to mitigate impacts on water quality where it is a concern. These mitigating measures should allow the Forest surface waters to meet State standards and maintain downstream beneficial uses.

We would appreciate working with the state in road management.

The Forest plans to separate uses with the ORV Plan that will, in effect, close areas to motorized use and provide an opportunity for cross country skiing.

Serious errors were detected in the mapping of riparian management areas (Prescriptions 9A and 9B) in the draft Land and Resource Management Plan. These errors have been corrected in the final LRMP.

Based upon the comments received on the draft LRMP, Forest Management has re-evaluated the riparian area management prescriptions, particularly as they regard riparian area condition and grazing management. The lack of information currently available on the condition of riparian areas across the Forest is an impediment to the effective management of these important resources. To rectify this situation, an accelerated multi-disciplinary riparian area condition inventory is proposed for implementation within the first 5 years of the planning period. Information on impacted riparian areas acquired in this effort will be used to develop riparian area management plans addressing specific measures needed to improve a degraded area. This approach recognizes that there are different factors contributing to the condition of any particular degraded area. These problems require careful site specific evaluation to develop effective measures to induce recovery.

Grazing management policies in riparian areas geared primarily to Forest-wide forage utilization levels restrict the land manager in implementing innovative livestock management techniques which may provide more effective means to maintain streambank stability, riparian vegetation and other factors commonly impacted by livestock. Nor do they recognize the differences in productivity, stability, vegetative structure and response to grazing that occur among the riparian ecosystems found on the Forest. A more site specific management policy is proposed for livestock grazing in riparian areas.

Forest Service policy recognizes that riparian areas are "among the most productive, sensitive, diverse and often most geographically limited ecosystems within National Forest lands". These areas are capable of supplying a wide range of high quality resources if properly managed. Where resource management activities result in tradeoffs, a careful evaluation is required to produce a proper mix of resource outputs. We recognize that because of the tradeoffs necessary in multiple use management of riparian areas, some resources will not be produced at their maximum potential. However, we do believe that the resource output goals of this plan maximize the net public benefit derived from riparian areas. At the same time, it provides for the maintenance of healthy riparian ecosystems, protects water quality and water delivery related values, and allows for the recovery of currently degraded areas.

other important riparian areas on the remainder of the Dixie that warrant intensive management.

E. Section V Comment

Page V-5, Wildlife and Fish: Will there be any monitoring of threatened and endangered species as well as Management Indicator Species?

Yes, As a part of Recovery or Management Plans associated with these species of plants and animals calls for continued monitoring of populations during the period they are federally listed.

F. Appendix A Comment

Page 4, Consultation With Others: Various agency plans consulted in preparing the Dixie Plan are listed. The Utah Division of Parks and Recreation is responsible for the production of the Statewide Comprehensive Outdoor Recreation Plan (the SCORP). The Dixie Forest planning team should try to include the SCORP as an input to the Forest Plan. More details are available from the Utah Division of Parks and Recreation.

The SCORP was used in connection with the Plan, but was inadvertently not listed.

II. DRAFT ENVIRONMENTAL IMPACT STATEMENT

A. Summary Comments

Page S-3, Paragraph 4: Recreational opportunities on the Forest are listed. Other activities also take place on the Forest, such as nature study, OHV use, whitewater boating, and horseback riding. These activities should be included or mention made that the present list is not inclusive.

The wording used in paragraph 4 is stated to say that recreation opportunities on the Forest includes those listed, it does not indicate that these are the only activities.

Page S-3, Paragraph 8: The statement is made that "The demand for dispersed recreation will never exceed the supply unless some unforeseen population increase takes place during the planning period" (See also page III-6, paragraph 5). The accuracy of this statement is questionable. The previous paragraph alludes to some of the complexities of the dispersed recreation issue. For example, timing; certain time periods are more popular than others, and it is during these periods that use, or demand is heaviest. Not only do areas that are nearby to water receive heavy use, but also trailheads, parking areas, and favorite campgrounds tend to attract disproportionate use. Under these circumstances, "demand" for the recreation resource is not being met... At times there may be competition for a given resource by different user groups (cross-country skiers and snowmobilers, backpackers and horsepackers, etc). This indeed is a real problem, and is likely to become more and more serious as increasing numbers of users take to the field. The identification of the problem is only the first step. Some type of plan should be identified that will address this problem and offer some possible solutions. (Mentioned also on page II-14, EIS.)

The Forest will change the wording of this paragraph to reflect the problem that is occurring in some of the more popular areas. We will change it to read as follows: Demand for dispersed recreation will not be exceeded across the forest; however, there will be some popular areas that may be over used. These areas will be monitored and if problems begin to occur, the Forest will take the necessary steps to mitigate the conflicts. The ORV Plan is updated each year and should give us opportunities to handle the problems when and where they occur.

Page S-4, Paragraph 6: It is stated that the demand for hunting and

The statement on page S-4 of the DEIS refers more to the expectation of the hunter and fishermen than to the opportunity for the activity. The opportunity for hunting and fishing will always exist and there is ample space available for all who would like to participate in these activities across the forest; however, the wildlife numbers may not be sufficient to provide a high quality experience to all who wish to participate.

Fishing will continue to exceed the supply for wildlife and fish. This statement is in conflict with the previous statement (EIS page S-3, paragraphs 7 & 8) which identifies hunting as a dispersed activity and then states that the demand for dispersed recreation will never exceed the supply unless population increases.	
Page S-5, Paragraph 5, Line 6: Water yield is discussed in terms of "12 acre inches." Is this the same as 1 acre foot? This is a confusing measurement.	We are referring to average rainfall. The text will be corrected.
Page S-7, Paragraph 1, Line 6: "Indirect effects often result from the interaction between Forest resources and management activities. They occur either later in time or at a different location, but are nevertheless foreseeable." It is questionable whether this statement as to foreseeability is true in every case.	
Page S-7, Paragraph 3, Line 7: "Funds will be allocated for site hardening and reconstruction of 50 sites each decade." This is equivalent to five sites per year which is only twenty percent of the amount needed according to paragraph 2. Will this contribute to the same problem identified under the Current Program Alternative--of developed sites becoming overcrowded with the resultant move of recreationists into the popular dispersed areas? How then do the alternatives differ?	The current program Alternative will not provide for a reconstruction of existing facilities as was stated in the DEIS. The last sentence of paragraph 2 of page S-7 will be removed. This sentence was mistakenly left in from a previous draft. Sites will continue to be overcrowded in the popular areas in this alternative, but with the construction of new facilities and the reconstruction of the 5 sites, each year there will be sufficient space available to accommodate use until the Plan is updated. When the Plan is updated, there will be more accurate information available to determine what the needs for the area in developed recreation will be.
Page S-10, Wilderness: The document states that "the Forest has a total of 555,390 acres of land that met the minimum requirements for wilderness. At least 90 percent of these acres would maintain their present qualities through the first planning decade." What management guidelines will be used to manage these areas. Will they be managed to protect wilderness values or will development be allowed if the demand is present?	Part of The lands that met the minimum requirements for wilderness will be managed as semi-primitive recreation. If it becomes necessary to go into these areas for any reason such as fire, disease, insect problems, etc., the opportunity will be there to do so; however, after the activity has taken place, the area will again be closed off and managed for dispersed recreation. Activities that are permitted in these areas will be required to maintain the natural character. Also, some areas will have no-surface-occupancy for leasing of oil and gas to offer protection. Please refer to the Final Area Management Map.
Page S-13, Paragraph 10: ORV use is mentioned. "Off-highway vehicle" (OHV) is the preferred terminology instead of "off-road vehicle" (ORV). The term OHV seems to more accurately capture the essence of this activity. Most "four wheeling" occurs on some type of road, rather than as a cross-country event, and is generally on underdeveloped or primitive roadways. The Division of Parks and Recreation has encouraged various agencies to adopt a standard term (OHV) in order to prevent confusion and inconsistency.	The term ORV is common to the Forest Service. Most of our users are familiar with it, to change now would create confusion. We do feel that your suggested terminology is more accurate and should be implemented in the future.
The Key to Abbreviations is a very useful tool in the Environmental Impact Statement. It might also be helpful if the abbreviation "MACRES" were included in this key.	MACRES (thousands of acres) will be added to the glossary.
B. Section I Comment	
Page I-3, Location of the Forest: It would be helpful to include in this description some mention of the three National Parks and one National Monument near the Forest and any other nearby recreation opportunities. A listing of	To keep the plan as small as possible and reduce duplicating information, we mentioned the National Parks and Monuments in the Management Situation Section, Page II-3. The list of major Highways and the Districts they serve are also noted in the Management Section, Page II-52.

major highways accessing the Forest would also be useful. This comment also applies to the Forest Plan, page I-2, Forest Description.

C. Section II Comments

Page II-2, Paragraph 5, Line 6: The statement is made that "Any differences in PNV among alternatives may be related to the production of public benefits to which prices have not been assigned." Some public benefits are then listed. Is it correct to assume that these are the NPBs identified on page S-14 and 15? It would be helpful to the reader to use a consistent nomenclature.

Page II-5, Paragraph 1: "Non-induced recreation" is mentioned. What is non-induced recreation?

Page II-5, Paragraph 9, Line 8: "Present net value more than doubles and the cost to produce the outputs eight times greater than the Minimum Level Benchmark over the first ten years." This is not a clear sentence.

Page II-14, Paragraph 1, Line 3: Construction of new sites are mentioned at Deer Lake, Pine Valley, and Blue Spring Point to meet increased use and enhance dispersed recreation. What kind of developed sites are planned?

Page II-29, Paragraph 7: The statements are made that "Management of Ashdown Gorge and Box-Death Hollow wildernesses would emphasize primitive wilderness settings. The management of the Pine Valley Mountains Wilderness would also stress semi-primitive setting..." Do management strategies differ between primitive wilderness settings and semi-primitive wilderness settings?

Page II-41, Paragraph 9: Indirect impacts to the cultural resource base are mentioned. What about direct impacts on the cultural resource base due to the various alternatives?

Page II-41, Paragraph 1: Dispersed recreation is mentioned. Is this the only "discussion" of dispersed recreation in terms of comparing alternatives. What about trail maintenance, etc? Some discussion of dispersed recreation is intermixed with the wilderness discussion. It would be less confusing to discuss wilderness and dispersed recreation under the various alternatives separately.

Page II-48, Paragraph 2: A good description of control on oil and gas leases and development permits is provided.

D. Section III Comments

Page III-1: A good description of the physical and biological setting of the Forest is provided. (Comment also applies to page II-1 of the Plan.)

Intangible benefits (those you refer to on page II-2, paragraph 5, line 6) a only a part of net public benefits you refer to in the summary text in pages S-14 and 15. The other portion of net public benefits are quantifiable in dollar terms. Thus NPB and unpriced public benefits are not equivalent and two sections of text you identify are consistent.

Non-induced recreation refers to recreation that will be taking place on the forest with out facilities. Self-contained vehicles, campers, and trailers will occupy popular dispersed areas.

Statement on Page II-5, Paragraph 9, line 8 should add the word "are" to reac "the outputs are eight times greater....".

The Forest is planning family type campgrounds with space available for campers, trailers and tents at Deer Lake, Pine Valley and Blue Spring Point. Group areas will be provided at Pine Valley.

Individual management plans for each of our wilderness areas are currently being prepared and may have slightly different direction as necessary to highlight the individual character or capacity of each areas. All direction will be in conformance with the parent wilderness legislation, however.

This sentence is making the comment that indirect effects of dispersed recreation will be difficult to mitigate due to the unknown element involved. With the increase of people, many artifacts will be disturbed without the Forest knowing what areas to protect. This is not true with known developmen since the areas of disturbance can be predicted and protection provided.

No, it is discussed separately under each of the alternatives.

E. Section IV Comments

Page IV-9, Paragraph 1: The section provides a good background to cultural resources.	
Page IV-10, Paragraph 2: The last line states that "It should be stated that adverse effects associated with dispersed recreation are difficult to prevent or to mitigate." Although it is difficult, are there any attempts being made to address the problem?	We are promoting public education and awareness programs to inform the public of the damage caused by vandalism. Enforcement of the law is being pursued to discourage the destruction of sites on public lands.
Page IV-33, Paragraph 1: Is it possible to identify how much recreational land would be adversely affected by timber management? Are popular recreation sites be affected?	We know where timber management programs are to be implemented on the Forest and we can predict the effects of these activities on recreation. All existing recreation sites have been identified and will be protected to preserve their qualities.
Page IV-45, Paragraph 8: The statement is made that mineral impacts to water resources are not expected to be irreversible or irretrievable. There are several examples of impacts that raise a question as to the validity of this statement. They include: polluted groundwater, depleted springs and perched aquifers associated with underground mining and subsidence, and erosion of stream channels with a concomitant drop in the water table which may effect a change in vegetative types that once existed under water table conditions.	We agree with your analysis. There are situations where minerals development can result in irretrievable or irreversible impacts on both ground water and surface water resources. Although we will attempt to minimize these impacts by recommending stringent mitigating measures and lease stipulations to protect water resources, it is unlikely that we can prevent such impacts in all cases.

F. Final Correctional Notes

EIS S-1, paragraph 4, line 4: "issures" should read "issues."
EIS S-3, paragraph 6, line 2: "skiier" should read "skier."
EIS S-3, paragraph 7, line 5: "Driving for pleasure is expected be become more popular..." should read "is expected to become."
EIS S-5, paragraph 5, line 2-3: "timber production" and "recreation" should be separated by a comma.
EIS S-7, paragraph 5, line 1: "proporties" should read "properties."
EIS S-8, paragraph 1, line 4: "...people become more dissatisfied the over-crowded..." should read "more dissatisfied with the over-crowded...."
EIS S-8, paragraph 3, line 3: "shortton" should read "shorten."
EIS S-8, paragraph 3, line 7: "to" should read "for."
EIS S-8, paragraph 4: "Cultural resource efforts would be continue..." should read "Cultural resource efforts would be to continue..."
EIS S-8, paragraph, line 1: "area" should read "areas."
EIS S-9, paragraph 1, line 3: "metigate" should read "mitigate."
EIS S-9, paragraph 1, line 5: "sporatic" should read "sporadic."
EIS S-9, paragraph 2, line 8: "deminished" should read "diminished."
EIS S-9, paragraph 4, line 3: "Constrined" should read "Constrained."
EIS I-3, paragraph 3, line 1: "...headquartered Cedar City..." should read "...headquartered in Cedar City...."
EIS II-8, paragraph 3, line 2: "noen" should read "none."
EIS II-8, paragraph 3, line 5: "remians" should read "remains."

Corrections have been made.

Page III-1, Zone of Influence: Was there any use of Social and Human Resource Units in examining the social and economic setting of the Forest? (Comment also applies to Page II-1 of the Plan.) The Resource Elements section in the EIS and the Plan provide a good discussion on recreation.	The Dixie did not utilize the Human Resource Unit concept. Zone of influenc defines areas adjacent to the Forest that are influenced by Forest policies decisions.
Page III-2, Final Paragraph: "Cedar City and St. George Districts...are the two most heavily used areas on the Forest." This is inconsistent with the Plan which states in the first paragraph on page II-4 that, "Cedar City and Pine Valley Ranger Districts...are the two most heavily used areas on the Forest." Are the St. George and Pine Valley Districts one and the same?	Yes, the Pine Valley Ranger District is headquartered in St. George, and sometimes people mistakenly refer to it as the St. George District.
Page III-4, Paragraph 5: It is stated that "the Forest expects to shift use to less crowded facilities at more remote locations...and from weekend to weekday use." What is the Forest's strategy for shifting that use? It is unlikely that the shift will spontaneously occur unless some management is implemented.	This chapter of the DEIS is talking about the effected environment and the current management situation. The most likely method to be used in this management situation is fee structuring. Weekend fees and fees in the more popular areas will be increased to encourage people to shift into other areas or other days to prevent overcrowding and resource damage.
Page III-8, Paragraph 5, Line 5: The statement is made that "Many of the trails have also been damaged by timber sale operations and are badly in need of repair." This problem should be mitigated. At the very least, these external costs of timber production should be internalized. If timber production adversely affects another use, such as recreation, then those negative impacts should be mitigated by charging those additional costs to the timber activity.	Damage to recreation trails by timber operations refer to historic problems. Present policy is to adjust timber sale boundaries or relocate trails to mitigate negative impacts. Timber funds do, in fact, pay for mitigation efforts.
Page III-9, Paragraph 3: The need to develop a ATV plan is identified. There is a clear need for such a plan and the State, through the Division of Parks and Recreation, would like to cooperate in the production of such a plan. Also, please note that the term ATV is a trademark for only one particular brand of machine. A more appropriate term is the generic OHV, for off highway vehicle. (See related comment on OHV terminology, State comment on page S-13.)	The Forest is presently developing an ORV Plan, based on input from numerous interested agencies and the public.
Page III-10, Paragraph 2: A cultural resources survey and inventory is identified. Even though the target date for its completion was established as 1990, it is estimated that at best, the survey could take another 174 years. Was the original commitment unrealistic? Is there some reason a more accurate goal was not established in the Plan?	This chapter is discussing the effected environment and in the existing situation there is no opportunity with existing funding to complete the cultural resources goal.
Page III-10, Paragraph 5: There is a discussion of some of the opportunities that may bring the Forest and Division of Parks and Recreation together under cooperating arrangements. The Division would appreciate the chance to work with the Forest in bringing educational programs and other events to the residents of the area. There are a number of issues that could be addressed by such cooperation.	The Forest will use every opportunity to be involved with the State to accomplish common goals.

EIS II-8, paragraph 4, lines 3 and 6: "accellerating" and "accelleration" should read "accelerating" and "acceleration."
EIS II-10, paragraph 3, line 2: "human resource program" should read "human resource programs."
EIS II-14, paragraph 5, line 5: "area" should read "areas."
EIS II-14, paragraph 6, line 11: "sking" should read "skiing."
EIS II-14, paragraph 6, line 14: "momonated" should read "nominated."
EIS II-20, paragraph 5, line 6: "then" should read "than."
EIS II-22, paragraph 1, line 8: "patroling" should read "patrolling."
EIS II-25, paragraph 1, line 3: "enhances" should read "enhance."
EIS II-25, paragraph 2, line 10: "Deptartment" should read "Department."
EIS II-25, paragraph 3, line 4: "...would move dispersed areas..." should read "...would move to dispersed areas...."
EIS II-32, paragraph 4, lines 3-4 should be single spaced.
EIS II-40, paragraph 6, line 2: "...resulting in the more site deterioration..." should read "...resulting in more site deterioration..."
EIS II-41, paragraph 1, line 1: "high productivity" and "RPA 1980" should be separated by a comma.
EIS II-41, paragraph 1, line 5: "dispensed" should read "dispersed."
EIS II-41, paragraph 2, line 8: "it's" should read "its."
EIS II-49, paragraph 6, line 2: "rescissions" should read "recessions."
EIS II-50, paragraph 5, line 2: "High Productivity" and "Composite" should be separated by a comma.

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